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PROGRESS IN PÆDIATRICS.[1]

By LORIMER DODS,
Sydney.

UNLIKE most medical specialties, which are concerned with some one aspect of the human organism or with a particular type of disease, pædiatrics represents a form of general medicine concerned with growth and development, health and disease during that period of the life cycle characterized by rapid growth. This period of rapid growth extends from the early weeks of intrauterine life until the end of adolescence, and present trends suggest that this space of approximately twenty years may become the responsibility of the pædiatrician of the future. This tendency to widen the chronological span of pædiatrics is illustrated by the recent establishment of "adolescent clinics" in certain pædiatric departments and hospitals and by the increasing and active cooperation between the obstetrician, the obstetrical physician and the pædiatrician in the important and rapidly widening field of "pre-natal pædiatrics".

PRE-NATAL PÆDIATRICS.

> . . . for we live, have a being and are subject to the actions of the elements, and the malice of disease in that other world, the true microcosm, the womb of our mother.[2]

The past six years have witnessed a series of brilliant discoveries which have rapidly advanced our knowledge of pre-natal pædiatrics. These recent discoveries began in 1941 with the recognition by Landsteiner and Wiener of the Rhesus factor as a cause of hæmolytic disease of the newborn, and the incrimination by Gregg and his associates of maternal rubella as a cause of congenital defects. These two outstanding advances in our knowledge of pre-natal pædiatrics have been followed by Warkany's demonstration that specific types of congenital defects in the animal can be produced by means of specific vitamin deficiencies in the maternal diet, and the work of Ingalls which suggests that various noxious agents operating at about the eighth week of fœtal life may be responsible for the production of mongolism. To these discoveries may be added the dramatic lowering of the death rate amongst the infants of diabetic mothers, achieved by endocrine therapy during pregnancy, the widening appreciation of the ill effects of various anæsthetics and drugs on the fœtal respiratory centres, and the various advances in our knowledge of maternal nutritional requirements.

Relation between the Mother's Nutrition and the Physical Status of Her Newborn Infant.

Numerous studies in both humans and animals have demonstrated the direct relationship between the mother's nutrition during pregnancy and the physical status of her infant at birth. Infants born to mothers who have suffered from varying degrees of starvation during their pregnancy in war-stricken Europe were found to be obviously under-weight, significantly under-height and possibly abnormally prone to congenital defects.

During 1946 the Harvard Department of Maternal and Child Health carried out an extensive study of a large group of pregnant women, which confirmed the direct relationship between the maternal diet and the physical condition of the newborn infant and established the fact that the majority of the stillborn and of the congenitally deformed infants were born to those mothers whose diets were classified as "poor" or "very poor". It was noted that a significant deficiency of protein in the mother's diet was associated with gross deficiencies in the weight and length of the fœtus and in a retardation of his skeletal age; a similar, but less pronounced, delay in skeletal maturation was observed in infants whose mothers had not received adequate amounts of calcium.

[1] Read at a meeting of the Pædiatric Section of the New South Wales Branch of the British Medical Association on November 13, 1947.

[2] Thomas Browne, *"Religio Medici"*.

These investigators stressed the fact that many of the most significant stages of embryological development are completed during the first ten weeks of pregnancy, at a time when little attention is paid to the nutritional requirements of the average expectant mother.

The available evidence suggests that in a nutritional struggle between the mother and her fœtus, it is not always the fœtus who wins. The traditional picture of the fœtus as a successful parasite which achieves its full nutritional requirements at the expense of the maternal host is rapidly fading in the light of present-day nutritional studies.

Noxious Influences during Pregnancy as a Cause of Congenital Malformations.

Recent studies of the ætiology of congenital malformations have commenced the unmasking of Shakespeare's "foul fiend . . . who gives the web and the pin, squints the eye and makes the hare lip" and have added a new significance to some of the "old wives'" theories about the ætiology of congenital defects.

The belief that the majority of congenital malformations resulted from defects in the germ plasma has been shaken by Gregg's incrimination of maternal rubella as a cause of certain congenital defects and by Warkany's brilliant demonstration that congenital defects, sometimes genetically determined, can be produced in newborn rats by means of specific vitamin deficiencies in the diet of their mothers.

Recent discoveries have also drawn attention to certain "critical periods" in the life of the embryo—periods when rapidly dividing fœtal cells are unusually susceptible to injury by nutritional deficiencies or other noxious factors.

Josef Warkany, of the Children's Hospital, Cincinnati, has proved that congenital malformations of a classical pattern can be induced in the offspring of female rats receiving diets deficient in riboflavin, and has shown that these abnormalities, which include hare lips and cleft palates, short limbs and syndactylism, can be prevented by giving the mother an adequate supply of crystalline riboflavin during her pregnancy. As a brilliant demonstration of the sharply defined "critical period" of embryological development at which this fœtal damage occurs, Warkany has shown that all these abnormalities can be prevented by giving an adequate amount of riboflavin between the 14th and 17th day of pregnancy.

Warkany has also shown that congenital defects occur in the young of rats which have received a diet deficient in vitamin *A*; such defects have included ocular abnormalities, diaphragmatic hernia, hypoplastic kidneys and ectopic ureters.

In his recent studies of the ætiology of mongolism, Ingalls of Harvard has determined the approximate time of origin of the mongolian deformities, has reviewed such disturbances as have been noted in the mothers of these infants, and has concluded that the embryological and maternal evidence stamps mongolism as a developmental arrest occurring at about the eighth week of gestation. Ingalls suggests that fœtal oxygen lack may be the most important factor in the causation of mongolism, and mentions as possible ætiological agents hæmorrhage, uterine abnormality and maternal infections.

Abnormalities of Infants Born of Mothers who are or who Later become Diabetics.

During the past decade, adequate treatment of diabetes has made it possible for an increasing number of diabetic women to bear children; prior to 1942 the mortality rate amongst their newborn infants was extremely high, varying from 30% to 60%. The great majority of these infants were over-weight and over-height and presented a series of specific abnormalities which included œdema, cardiac hypertrophy, hyperplasia of pancreatic islets, extensive extramedullary hæmatopoiesis, an increased osseous age, an appearance of undue maturity and an increased incidence of various congenital deformities.

Priscilla White and others recognized the importance of maternal endocrine imbalance as a cause of these abnormalities in the infant, and showed that after appropriate endocrine therapy during pregnancy the newborn infant was free from such abnormalities and the neo-natal mortality was reduced to 10% or even lower. This endocrine therapy is usually commenced at or before the third month of pregnancy and consists of daily intramuscular injections of œstrogenic and *corpus luteum* hormones given in increasing doses throughout the pregnancy.

As these abnormalities of the newborn may appear in the infant of a "potential diabetic" many years before her diabetes becomes apparent, White treats the pregnant daughters of diabetic mothers in the same way.

A Clinic for Rh-Negative Mothers.

At the Boston Lying-in Hospital a special clinic for Rh-negative mothers established and conducted by Diamond provides an excellent example of valuable and well organized cooperation between the obstetrician and the pædiatrician. Every Rh-negative mother is referred to this clinic, the Rh status of the husband is determined and any history of previous pregnancies or blood transfusions is reviewed. If this initial review reveals no significant evidence, the situation is carefully explained to the mother who is reassured and dismissed from the clinic. If the husband proves to be Rh-positive and the mother gives a significant history, then she attends the clinic throughout her pregnancy. The antibody titre of her serum is estimated at about the twenty-eighth week of her pregnancy, and this estimation is repeated each fortnight until she is delivered. If repeated estimations reveal a significantly elevated and rising antibody titre in the mother's serum or a sudden marked fall in her antibody titre, labour is induced at about the thirty-seventh week of pregnancy. This clinic provides for the organized observation and investigation of all Rh-negative mothers with significant histories, serves as a tutorial centre and as a bureau of information for mothers, nurses, medical students and doctors, and even achieves a regular and generous supply of Rh-negative blood from the mother's relations.

THE NEWBORN INFANT.

Treatment of Hæmolytic Disease of the Newborn.

Some day it may be possible to prevent immunization of the Rh-negative mother by the Rh antigen, or if this is impossible, to prevent fœtal injury after maternal immunization has occurred; until such advances are made, treatment of hæmolytic disease of the newborn must be limited to attempts to promote the recovery of affected infants.

The protagonists of exsanguination replacement transfusion as a method of treatment for such infants maintain that the "exsanguination" removes the greater portion of the infant's circulating antibodies, and that "replacement" provides an adequate volume of Rh-negative blood which cannot be affected by any remaining Rh antibodies.

The present enthusiasm for this type of transfusion may be justified; but it is essential that more evidence should be available before this method is generally accepted. The satisfactory results obtained by ordinary transfusions of Rh-negative blood suggest that this represents the most appropriate form of treatment for the great majority of such infants, and that exsanguination-replacement transfusion should be reserved for the treatment of the most severe forms of hæmolytic disease of the newborn.

Diamond's Replacement Transfusion Technique.

At the Boston Lying-in Hospital I was able to observe a group of infants treated by Diamond's replacement transfusion technique, and was impressed by the relative simplicity of his methods which are as follows: Immediately after delivery the cord is clamped six or seven inches from the abdominal wall, but is not ligated; blood is taken for determination of the infant's Rh group, for detection of the presence of free antibodies and for a blood count. The umbilical cord is divided about one inch from the abdominal wall and a special plastic catheter

is threaded into the umbilical vein for a distance of about four to six inches, and by means of the apparatus illustrated in Figure I blood is withdrawn and administered in amounts of 10 to 15 millilitres. The first step consists in the removal of 10 to 15 millilitres of blood, and this is followed by the administration of a similar amount of blood. At intervals during the transfusion five millilitres more blood are given than the amount taken, until a credit balance of approximately 75 to 150 millilitres of blood has been achieved. For an infant weighing seven pounds the removal of 650 millilitres of blood (equivalent to about twice the amount of his blood volume) and the administration of about 750 millilitres of blood might be appropriate amounts, and this procedure would probably occupy a period of approximately three to four hours.

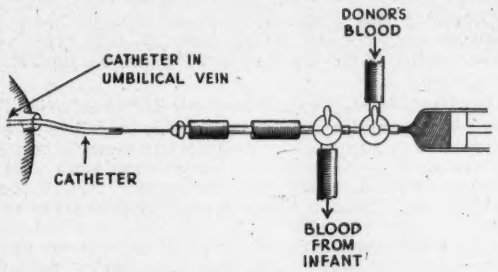

FIGURE I.

The blood given is group O, Rh-negative, to which AB substance has been added. In view of the possible hazard of tetany, Diamond recommends that two to five millilitres of 10% calcium chloride solution should be slowly injected into the umbilical vein at the end of the transfusion. Penicillin and sulphadiazine are given prophylactically for a period of forty-eight hours after the transfusion.

It has been estimated that if the amount of blood given is approximately equivalent to twice the infant's blood volume, then more than 80% of the infant's blood has been replaced. Estimations of the antibody titre of the infant's blood have demonstrated the rapid diminution or disappearance of antibody during the later stages of the transfusion.

Diamond and his colleagues have carried out more than 70 transfusions of this type; a review of their first 35 cases suggested that the mortality rate had been significantly reduced by this procedure.

I was impressed by the results achieved in some of the very severe forms of hæmolytic disease of the newborn with this type of treatment. To quote one example from Diamond's clinic: a mother whose blood contained a high titre of anti-Rh agglutinins was delivered at about the thirty-seventh week of her pregnancy. At birth her infant was severely jaundiced, his liver and spleen were enlarged and there was a high titre of free antibody in his cord blood. His blood count revealed only 700,000 red cells per cubic millimetre and a hæmoglobin value of three grammes *per centum*. After the administration of nearly 1000 millilitres and the removal of approximately 800 millilitres of blood, this infant made an excellent recovery.

Prognosis of Hæmolytic Disease of the Newborn.

When a mother has borne one infant suffering from hæmolytic disease of the newborn, it may be assumed that all subsequent Rh-positive infants which she may bear will be affected, whatever interval there may be between their births. There seems little to support the suggestion that an interval of several years between the original period of immunization and the birth of an infant or between pregnancies will lessen the hazard or the severity of hæmolytic disease. Potter of the Chicago Lying-in Hospital states that she has not observed any woman who has given birth to a normal Rh-positive child following the birth of one with hæmolytic disease, and has not observed any appreciable diminution in the severity of the disease in subsequent infants, even though the pregnancies were separated by many years.

Those who favour artificial induction of an early labour do so on the assumption that the disease will be milder if the intrauterine period of exposure to anti-Rh agglutinins is shortened. As I have already pointed out, Diamond recommends early induction of labour in appropriate cases; but other authorities do not favour induction, and the staff of the Chicago Lying-in Hospital have concluded that little or nothing is gained by this procedure.

Diamond stresses the fact that a very large proportion of the newborn infants who die from hæmolytic disease, die during the first twenty-four hours of life, and that an infant who passes successfully through this first twenty-four hours has a relatively good chance of survival.

Vitamin Requirements during Early Infancy.

Many American pædiatricians maintain that the normal infant, whether breast fed or artificially fed, should be given 500 to 1000 international units of vitamin *D* per day from the second or third week of life, and the premature infant at least three or four times this amount.

It may be argued that this supplement of vitamin *D* is not essential for those healthy, full term, breast fed infants who, with their well fed mothers, enjoy many months of Australian sunshine; but it may be of value to other less fortunate breast fed infants in this country.

Clifford has demonstrated that suspension of vitamin *A* and *D* in "non-oily" fluids, such as propylene glycol, will ensure a much more adequate absorption of these vitamins than occurs when they are administered in oil. The use of "watery" or propylene glycol preparations of vitamin *A* and *D* is particularly important in the case of the premature infant; Clifford has demonstrated that test doses of vitamin *A* in oil given to premature infants resulted in extremely poor absorption curves, and that normal absorption curves occurred when the vitamin *A* was given in propylene glycol. The use of these "watery" preparations also removes the hazard of oil aspiration.

Clifford's study of appropriate vehicles for vitamins *A* and *D* is being repeated by other workers, and if confirmed will prompt a revolutionary review of the preparation of fat-soluble vitamins used in pædiatric practice.

Most authorities suggest that all infants, whether artificially fed or breast fed, should receive extra vitamin *C* (equivalent to 25 to 50 milligrammes of ascorbic acid per day) after the second or third week of life, and that all premature infants should receive at least 50 milligrammes of ascorbic acid per day after the first week of life.

Epidemic Diarrhœa of the Newborn.

Experience of a number of epidemics of diarrhœa of the newborn has convinced most authorities that this is not a disease entity, but a symptom-complex of varying ætiology. Some epidemics have been bacterial in origin, some have appeared to be the result of a virus infection, while in a number of outbreaks no specific organism has been isolated.

The combination of any two of the following clinical features should prompt immediate isolation and investigation of the affected infant: the passage of one or more loose stools, sudden unexplained loss of weight, vomiting or refusal of food. The appearance of similar symptoms in a second infant should be accepted as evidence of an "epidemic", and the nursery should be closed.

The importance of carefully controlled attempts at restoration of potassium loss in the acute diarrhœas of infancy has received wide recognition, and for this reason Darrow's solution[1] is given subcutaneously during the period of parenteral fluid therapy. The usual amount of Darrow's solution given subcutaneously to a small infant suffering from acute diarrhœa is in the neighbourhood of 20 to 30 millilitres per pound of body weight per day.

[1] Darrow's solution: potassium chloride two grammes, sodium chloride three grammes, molar sodium lactate solution 40 millilitres, water 710 millilitres.

It is most important to be aware of the hazard of uncontrolled doses of potassium and to adopt a careful conservatism in its use.

In any attempt to control the electrolyte balance of these infants it is important to remember their inexperienced and relatively inefficient kidneys and the obvious risk of administering an excess of sodium chloride.

Bacteriostatics, including streptomycin given orally, have proved disappointing, and γ-globulins have been of no avail in treatment.

Some Surgical Conditions of the Newborn.

During the past decade pædiatric surgeons have made many dramatic advances in this field of surgery, and have established the fact that the newborn infant usually represents a better surgical risk during the first forty-eight hours of life than he does a week later. A rapidly increasing knowledge of the physiology and pathology of the newborn infant, scientific methods of controlling fluid and electrolyte balance and a widening range of bacteriostatics have all helped the pædiatric surgeon to achieve his recent spectacular successes in this field.

The following brief comments about the investigation and treatment of certain surgical conditions of the newborn are based on the teachings of Gross and his associates at Harvard.

Œsophageal Atresia and Tracheo-Œsophageal Fistula.

The classical clinical picture of œsophageal atresia and tracheo-œsophageal fistula is well known—regurgitation of all feedings, an excess of mucus and attacks of cyanosis. The diagnosis is easily confirmed by passing a number 8 or 10 soft rubber catheter into the œsophagus and demonstrating an obstruction; this procedure may be carried out with or without the aid of fluoroscopy, and one or two millilitres of lipiodol may be instilled to outline the upper œsophageal pouch if necessary.

Obviously all oral feedings should be forbidden. Gross recommends that operation should be performed within the first twenty-four hours if possible. The present operation of choice consists in the division and closure of the tracheo-œsophageal fistula and the establishment of an end-to-end anastomosis of the œsophagus; a gastrostomy opening is made next day, and the infant is fed through this for a period of ten days.

Gross and Swenson, who have had a wide experience of this operation, report only three post-operative deaths among the last 21 infants suffering from this condition.

Congenital Obstruction of the Alimentary Tract.

A plain X-ray examination of the abdomen will often be sufficient to confirm or deny the presence of congenital obstruction of the alimentary tract. This X-ray examination of the abdomen is carried out with the infant in the prone and "head down" position, and includes both antero-posterior and lateral views, which usually demonstrate a dilated duodenum or distended loops of small intestine, if obstruction is present.

The administration of barium represents an added insult to a disturbed and obstructed alimentary tract and also carries the hazard of barium inhalation pneumonia. If it is imperative to give barium by mouth, very thin gruel should be used and gastric lavage should be performed as soon as possible after the X-ray examination. If it is necessary for the localization of the obstruction, a barium enema may be given; but this should be deferred until after an ileostomy opening has been made.

Examination of meconium for the presence of bile and cornified epithelial cells may be of some help in the diagnosis of atresia of the alimentary tract. Farber's method of examining ether-washed meconium for cornified epithelial cells is based on the fact that meconium normally contains desquamated cornified epithelial cells from the infant's skin which have been swallowed with *liquor amnii* during intrauterine life; failure to find such cells in the meconium strongly suggests atresia of the alimentary tract.

Meconium Ileus.

Obstruction of the colon and the lower portion of the small intestine by tenacious, inspissated meconium is now known to be the result of congenital pancreatic deficiency (the so-called "congenital fibrosis of the pancreas").

Neuhauser has emphasized the classical radiographic picture produced by this condition, and has pointed out that a plain X-ray film of the abdomen will reveal dilatation of the small intestine, which does not end abruptly in a point of obstruction, but in scattered bubbles of gas extending through most of the distal portion of the small intestine.

Treatment consists in the establishment of an early ileostomy opening which may be followed by repeated irrigations with a 1% solution of "Pancreatin" and administration of the same solution by duodenal tube.

Apparently this condition is more common than the literature suggests, as twelve cases of this type were treated in the Children's Hospital, Boston, during 1946.

Premature Synostosis of the Skull ("Stenocephaly").

Successful surgical treatment of the so-called "stenocephalies" has made earlier diagnosis imperative, and for this reason it is important to palpate the skull sutures of every newborn infant and to arrange for an X-ray examination if there is any suspicion of premature synostosis.

It is now recommended that craniectomies of the appropriate suture lines should be performed during the early weeks of life. Even after the most carefully performed craniectomy the skull bones may tend to reunite; Ingraham and his associates are attempting to control this reunion by the insertion of "plastic" materials in the interosseous spaces.

Subdural Hæmatoma during the First Month of Life.

Franc Ingraham, director of the neurosurgical unit at Harvard University, was the first to emphasize the frequency of subdural hæmatoma during the first month of life, to define certain suggestive signs and to stress the importance of early "subdural tap" as a means of diagnosis. The following comments are based on the teachings of Ingraham and his associates.

During the age period under discussion, the outstanding cause of subdural hæmatoma is birth trauma, which probably results in a tearing of the delicate tributary veins leading from the superior aspect of the cerebral cortex to the longitudinal sinus.

There appears to be no classical clinical picture, but there are groups of symptoms and signs which should immediately suggest the possibility of a subdural hæmatoma. If, after a difficult or prolonged labour, an infant fails to thrive, is unduly irritable and hypertonic and perhaps exhibits some irregular fever and vomiting, the physician should suspect the possibility of a subdural hæmatoma. If measurements of this infant's head suggest any exaggeration of the normal increase in its circumference, the total evidence strongly supports a diagnosis of subdural hæmatoma. Convulsions may occur, but are much more common at a later stage of infancy, when frank enlargement of the head, widening and bulging of the fontanelles and the "cracked pot" percussion note may be evident.

As delay in diagnosis and treatment carries the obvious hazard of irreparable damage to the rapidly growing brain, "subdural tap" should be performed as soon as the diagnosis is suspected.

Thanks to T. Y. Nelson's enthusiastic work in this field, Sydney has had three years' experience of Ingraham's technique of diagnosis and treatment of subdural hæmatoma in infancy, and as a result many of you are aware of these methods.

The technique of the "subdural tap" is very simple. Under local anæsthesia, a number 19 short bevel lumbar puncture needle (about two inches in length) is inserted through the frontal suture line just beyond the lateral margin of the anterior fontanelle. The needle is inserted

very slowly until it is felt to penetrate the dura, and such fluid as may be present is allowed to drain away.

It is obvious that the frequency with which subdural hæmatoma is recognized in infancy is directly proportional to the intensity with which it is sought; while treatment is essentially a neurosurgical problem, suspicion of this condition is the responsibility of the general practitioner, and early diagnosis is essential if good results are to be achieved.

The Double Aortic Arch and Other Vascular Anomalies.

Symptoms resulting from the pressure of a double aortic arch or other anomalies of the aorta and its vessels may include stridor, cough, wheezing, cyanosis and difficulty in swallowing. The respiratory symptoms usually begin to appear during the earliest weeks of life, while the dysphagia is rarely apparent until the infant begins to take solid food.

During the past two years Gross has demonstrated the dramatic relief which follows surgical division of the anomalous vessel, and has performed this operation with success on more than ten infants.

I have drawn attention to this rare disturbance of the neonatal period because of its possible importance in the differential diagnosis of "wheezing" and stridor in this age period, and because the radiographic shadow produced by a right aortic arch may simulate the shadow of an enlarged thymus.

Infantile Cortical Hyperostosis.

Cortical hyperostosis, which may occur during the earliest weeks of life, manifests itself as a tender swelling of the soft tissues overlying a bone; the lesion usually appears over a rib, the mandible, the clavicle or the scapula, but may occur over almost any bone. The onset is sudden, there is no obvious constitutional disturbance and spontaneous recovery always occurs. Radiographic examination reveals no bony changes until the later stages of the attack, when some cortical changes may be detected in the affected bone. The anatomical distribution of the lesions and other features help to differentiate this condition from scurvy, while the lack of constitutional disturbance and the spontaneous remission distinguish it from acute osteomyelitis.

Retrolental Fibroplasia.

Retrolental fibroplasia, which is present in the eyes of a certain percentage of premature infants, was first recognized by Terry in 1942, and has been the subject of special studies at the Massachusetts Eye and Ear Infirmary over the past five years.

The classical features include the presence of an "embryonic membrane" behind the lens, persistence of the hyaloid artery and unduly pale irises. As a rule both eyes are involved, and blindness of variable degree is the result.

The highest incidence of this condition occurs in those premature infants who weigh less than three pounds at birth, the incidence in this group being in the neighbourhood of 25%.

According to Ingalls, epidemiological and embryological data both suggest that this condition is the result of a developmental disturbance occurring at about the sixth or seventh month of pregnancy.

STREPTOMYCIN.

Among the many conditions which may prompt the use of streptomycin in pædiatric practice, three are of particular significance: *Hæmophilus influenzæ* meningitis, tuberculous meningitis and pertussis.

Hæmophilus Influenzæ Meningitis.

Although it has been shown that mild types of influenzal meningitis may be successfully treated with streptomycin alone, most authorities recommend that all forms of this disease should receive the full therapeutic barrage of streptomycin, sulphadiazine and type-specific antiserum.

The concentration of streptomycin necessary to inhibit different strains of *Hæmophilus influenzæ in vitro* may vary from less than six units per millilitre for the most sensitive forms to 1000 units per millilitre for the most resistant forms. Most strains of *Hæmophilus influenzæ* respond *in vitro* to a concentration of ten units of streptomycin per millilitre; fortunately most of the strains exhibiting resistance to streptomycin are sensitive to sulphadiazine and some of them will respond to penicillin.

Alexander and others recommend the use of suspensions of "colony mixtures" rather than individual colonies for all streptomycin sensitivity tests, as a means of recognizing the occasional emergence of a streptomycin-resistant form from a sensitive strain. It is obviously most important that these streptomycin-resistant forms should be recognized as early as possible and that the clinician should always be aware of this hazard.

The following statements about the use of streptomycin in the treatment of influenzal meningitis are based on the methods recommended by John Davies at the Boston Children's Hospital during the year 1947.

Intrathecal Streptomycin Therapy.

Streptomycin is given intrathecally in doses of 25,000 to 50,000 units twice a day for three days or until the cerebro-spinal fluid is sterile, and then once a day for another four days. Five thousand units of streptomycin dissolved in one millilitre of normal saline solution is the usual dilution; concentrations higher than 10,000 units in one millilitre are not advisable.

Intramuscular Streptomycin Therapy.

Davies advises the administration of 100,000 units intramuscularly at intervals of two hours for twelve doses, followed by the same dose at intervals of three hours for the next five days. Fifty to one hundred thousand units of streptomycin dissolved in one millilitre of saline solution represent the usual concentration of these intramuscular injections. This short-term, high-dosage scheme of treatment represents an attempt to achieve high blood levels, to avoid the development of resistant strains of *Hæmophilus influenzæ*. The present tendency is to give a similar or smaller daily dosage at eight or twelve hourly intervals.

Tuberculous Meningitis.

The number of children who have temporarily recovered from tuberculous meningitis after intensive treatment with streptomycin is steadily increasing. Although this represents a remarkable achievement, it is important for both medical attendants and parents to realize that many children who recover exhibit various neurological sequelæ.

As a rule, treatment consists of daily intrathecal injections and three or four hourly intramuscular injections of streptomycin, a régime which is continued for an arbitrary period of approximately three months or longer; 50,000 units of streptomycin, dissolved in five or ten millilitres of normal saline solution, are given intrathecally once a day for four to six weeks. Intramuscular injections of 500,000 to 1,000,000 units are given daily for approximately three months. Children treated by these methods may achieve streptomycin blood levels of approximately 30 or more units per millilitre one to two hours after an intramuscular injection of streptomycin, and cerebro-spinal fluid levels varying from 10 to more than 30 units per millilitre twelve to twenty-four hours after the intrathecal administration of streptomycin.

Dr. Stephen Williams has kindly estimated the streptomycin concentration in the cerebro-spinal fluid of a child, aged six years and weighing 40 pounds, suffering from tuberculous meningitis, who has been under my care for the past two months. (See Table I.)

Recent work suggests that the intramuscular injections of streptomycin may be given at intervals of twelve or even twenty-four hours, and that the intrathecal injections of streptomycin may be given every second day instead of daily.

Early diagnosis is obviously most important if streptomycin is to be of any value. As aids to early diagnosis, Dr. I. A. Cathie, of the Hospital for Sick Children, London, has emphasized the importance of searching for the tubercle bacillus in the cerebro-spinal deposit rather than in the clot, and the value of fluorescent microscopy after staining with phenol and auramine.

TABLE I

Date.	Streptomycin Concentration in Cerebro-spinal Fluid. (Units per Millilitre.)	Intramuscular Dose of Streptomycin. (Units 4-Hourly.)	Intrathecal Dose of Streptomycin. (Units per 24 Hours.)
29. 9.47	8	100,000[1]	50,000×2
30. 9.47	16	100,000	50,000×2
1.10.47	8	100,000	50,000×2
2.10.47	16	100,000	50,000×2
3.10.47	32	100,000	75,000×2
6.10.47	32–64	100,000	75,000×2
7.10.47	32–64	100,000	50,000×2
9.10.47	16–32	100,000	50,000×2
10.10.47	8–16	100,000	50,000×2
11.10.47	16–32	100,000	50,000×1
13.10.47	8–16	100,000	50,000×1
14.10.47	8–16	100,000	50,000×1
17.10.47	16–32	100,000	50,000×1
18.10.47	8–16	100,000	50,000×1
22.10.47	8–16	100,000	50,000×1

[1] Equivalent to approximately 20,000 units per pound of body weight per day.

Pertussis.

It is thought that streptomycin inhalations have proved to be of some value in the treatment of pertussis. In its simplest form this treatment consists of inhalations of 50,000 to 100,000 units of streptomycin every three hours with or without the administration of streptomycin nasal drops (10,000 units in one millilitre of saline solution); in severe cases this treatment has been combined with the intramuscular administration of streptomycin. Streptomycin sometimes proves irritating to the oro-pharynx of infants, but fortunately the majority of infants can tolerate a week's treatment without obvious distress.

Recently the Strong Memorial Hospital in Rochester has developed a method of spraying a finely ground ("micronized") streptomycin, which is inhaled as a "mist" at intervals of six to eight hours for six or seven days, and which has proved helpful in the treatment of pertussis in its early stages.

IMMUNIZATION AGAINST INFECTIOUS DISEASES.

Rubella, Mumps and Varicella.

The realization that rubella, mumps and varicella, which are usually harmless during childhood, may have more serious consequences later in life has prompted the pædiatrician to encourage the spread of these infections amongst healthy children. An essential corollary to this new approach is the protection of certain frail and sick children and of susceptible adults.

Enders, who introduced the mumps complement fixation test in 1945, has recently perfected a skin test for this infection. By means of these two tests, Enders has demonstrated that a considerable number of children and adults suffer from subclinical attacks of mumps, and that a certain number of cases of meningo-encephalitis, which present none of the usual clinical features of mumps, are probably caused by the mumps virus. As a means of protection or attenuation, γ-globulins fractionated from pooled human serum have proved to be of no value; but γ-globulins from mumps convalescent serum may be of some value as a means of modifying this disease.

Measles.

In the United States the γ-globulins used in the prevention and modification of measles are prepared from plasma which has been collected from city dwellers and is surprisingly uniform in its antibody content; five millilitres of these γ-globulins are equivalent in antibody content to approximately 125 millilitres of human plasma.

An intramuscular injection of this preparation, in a dosage of 0·1 millilitre per pound of body weight, if given within seven days of exposure, will protect more than 80% of susceptible children from measles, while a dosage of 0·025 millilitre per pound of body weight, if given before the seventh day after exposure, will protect about 30% of susceptible children and will modify the attack of measles in the remaining 70%.

Diphtheria.

American methods of immunization against diphtheria vary in many details, and the following statement is merely an attempt at a generalization. Immunization is usually commenced at about the fifth or sixth month or even earlier, alum-precipitated or fluid toxoids are used, the immunizing doses are given at intervals of four to six weeks, and a "booster" dose is given at about five years of age.

Purification and crystallization of toxoids by alcohol fractionation methods have resulted in products from which more than 99% of the nitrogen has been removed, and which rarely cause even the mildest reaction.

Pertussis.

The total dosage of phase I pertussis vaccine recommended for immunization of an infant varies from less than 50,000 million to more than 100,000 million organisms. This immunization is usually commenced at about five to six months, but according to some authorities may be started as early as three months of age. These doses of vaccine are usually given in three injections at intervals of one month.

Estimations of the agglutinin titre of the serum are being used as a means of determining the degree of immunity achieved by the use of pertussis vaccine; an agglutinogen skin test for the detection of susceptibility to pertussis has also been perfected and may prove to be of value in the determination of susceptibles.

"Hyperimmune" human serum is being superseded by γ-globulins prepared from such serum. The normal adult's blood has a low titre of pertussis agglutinins, but if adults are immunized with pertussis vaccine, high titres are obtained and fractionation of this serum results in a high titre γ-globulin.

CONTROL OF FLUID AND ELECTROLYTE IMBALANCE.

Gamble has emphasized the value of expressing concentrations of electrolytes in terms of "chemical equivalents"; this method presents the clinician with the totals of separately determined anions and cations and also enables him to visualize or record in graphic form the ionic equilibrium (acid-base balance) of his patient. In this way the relative magnitude and the inter-relationship of the electrolytes are much more clearly and correctly displayed than is possible with our usual system of measuring and thinking of electrolytes as so many milligrammes per 100 millilitres of plasma.

The appropriate term for expressing inorganic ion values is the "milliequivalent", and this measure is calculated by dividing the number of milligrammes per litre by the atomic weight and multiplying by the valency.

As an example, if the plasma sodium level is 3300 milligrammes per litre, then as sodium is monovalent and has a molecular weight of 23, the plasma contains $\frac{3300}{23}$ or 143 milliequivalents per litre. The carbon dioxide combining

power of the plasma may be converted into milliequivalents per litre by dividing its value in volumes *per centum* by 2·2 (for example, a carbon dioxide combining power of 60 volumes *per centum* represents 27 milliequivalents per litre).

Plasma protein values are converted into milliequivalents per litre by multiplying the number of grammes per 100 millilitres by 2·43. As an example, if the plasma protein level is seven grammes per 100 millilitres, then the milliequivalent value will be 7·0 × 2·43, or 17.

The normal acid-base balance of plasma expressed in this manner as milliequivalents per litre is illustrated in the accompanying diagram from Gamble's monograph on extracellular fluid (Figure II).

This method of assessment of electrolyte disturbances, which is used as a routine procedure in the wards of the Boston Children's Hospital, is probably beyond our reach at present. I have stressed this method, not because I feel that it should be adopted as a routine in our children's hospitals, but because I have been most impressed by its practical value in the assessment and management of special cases. I think that you will agree with me that a satisfactory fluid and electrolyte balance can be maintained in most sick children with a minimum of help from the laboratory, but that in occasional cases it is essential that the pædiatrician should be able to visualize clearly the child's ionic equilibrium, and that it is in such cases that the use of chemical equivalents may be of great value.

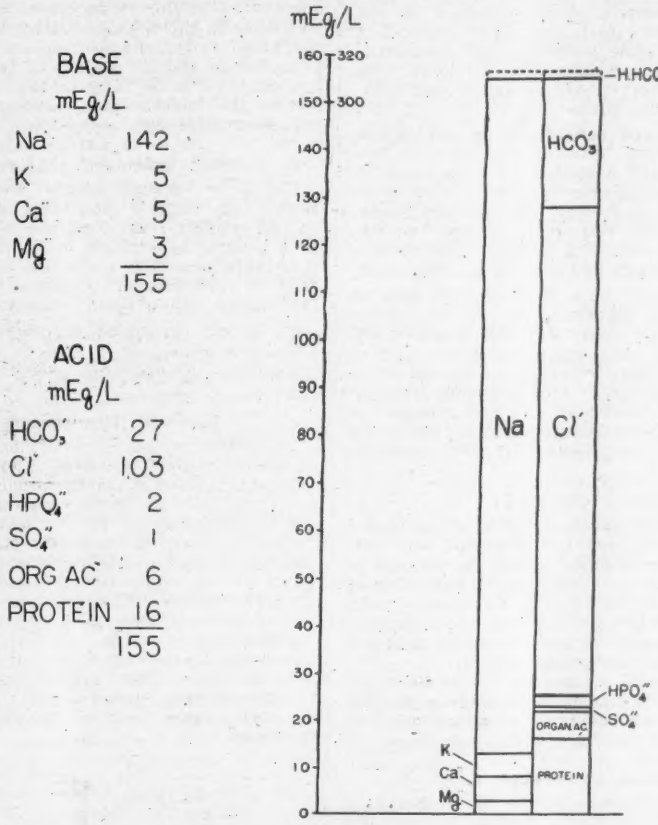

FIGURE II.

Acid-base composition of blood plasma. (Taken from J. L. Gamble: "Chemical Anatomy, Physiology and Pathology of Extracellular Fluid; A Lecture Syllabus".)

Potassium.

A decade ago it was recognized that substances such as potassium could escape from the cell, and that sodium of the extracellular fluid could enter the cell; it was also known that in certain circumstances considerable amounts of potassium could escape from the intracellular spaces, but the biochemical and clinical significance of this electrolyte disturbance was not appreciated until 1946, when Darrow emphasized the grave hazards of continued potassium loss and suggested means of replenishment.

Darrow investigated a series of infants during the starvation periods of acute diarrhœa, and demonstrated that these infants lost not only sodium, chloride, water and protein, but also large amounts of potassium. He also established the significant loss of potassium which occurs in other dehydration syndromes, and demonstrated the excellent results achieved by potassium replacement therapy. (The composition of his solution was given earlier in this paper.)

Darrow's original suggestion that his solution should be given intravenously in amounts corresponding to 100 millilitres per kilogram of body weight over a twelve hour period has been modified by many pædiatricians, and the present tendency is to give this solution subcutaneously and in smaller amounts. An amount equivalent to less than 80 millilitres per kilogram of body weight probably represents an appropriate volume for subcutaneous administration to a sick infant over a period of twenty-four hours. Amounts similar to this may be given subcutaneously for the first two days of a severe attack of diarrhœa and may be followed later by the oral administration of one to two grammes of potassium chloride per day.

Darrow and others have stressed the importance of treating dehydration and attempting to restore normal renal function before administering this potassium-containing solution. If these preliminary precautions are taken, and if the solution is administered slowly and in appropriate dosage, there should be little risk of potassium intoxication; but this hazard should not be forgotten and should prompt a conservative approach to dosage.

Casein Hydrolysates.

Of the various casein hydrolysates, "Amigen", prepared by pancreatic digestion, seems to be the most widely used in American pædiatric practice. This preparation consists of amino acids and some polypeptide nitrogen and has a salt content of about 3%. As water has been added during the process of hydrolysis, "Amigen" is not qualitatively equal gramme for gramme to protein, 1·3 grammes of "Amigen" being equivalent to about 1·0 gramme of protein.

Parenteral Administration.

Appropriate solutions of "Amigen" may be given intravenously or subcutaneously, and have been given intraperitoneally.

For intravenous infusion the usual preparation is 5% "Amigen" in a 5% dextrose solution. It is essential that this infusion should be given slowly; the usual rate recommended for infants and children is 0·01 gramme of "Amigen" per kilogram of body weight per minute, but experience suggests that even slower rates than this are advisable. As a practical simplification of this mathematical ruling, about six to 10 drops per minute would be an appropriate rate of administration for an infant, and 10 to 30 drops per minute would be appropriate for a child. Rapid intravenous infusion often produces flushing and vomiting; flushing of the face or chest should always prompt slowing of the rate of administration.

Except in the presence of severe dehydration or peripheral circulatory failure, subcutaneous administration proves satisfactory and results in a rate of absorption slow enough to make any reactions unlikely. A suitable solution for subcutaneous injection is the usual "Amigen"

(5%) in 5% dextrose solution, diluted with an equal volume of distilled water. Intraperitoneal infusions of "Amigen" solution have been tried, but the rapid absorption from the peritoneum usually results in flushing, nausea and vomiting.

Oral Administration.

"Amigen" is readily soluble in water and theoretically may be given to children by mouth, but most children past the age of infancy strongly object to the taste, and tube feeding is often necessary.

HÆMATOLOGY.

Megaloblastic Anæmia of Infancy.

During my stay in Boston I was interested to see several examples of a megaloblastic anæmia of infancy, as this type of anæmia is rarely recognized in Australian infants. Some American pædiatricians attribute this anæmia to the use of certain forms of evaporated milk, and this possibility is being investigated.

The infant is usually aged between three and twelve months, the liver is enlarged, petechiæ are common and there is often an associated infection. The anæmia is macrocytic (the mean corpuscular volume varying from 90 to 130 cubic μ) and is accompanied by leucopenia, thrombocytopenia and a low reticulocyte count. In the marrow smears are seen a classical megaloblastic pattern and a disturbance of white cell and platelet production.

The response to treatment with liver or folic acid is rapid and complete. It is surprising to find that maintenance treatment is not necessary and that relapses are apparently unknown. In most cases the blood picture and the marrow pattern have returned to normal after about three weeks of treatment. This complete recovery after a short period of treatment and the absence of relapses have suggested the possibility that an associated infection may have been responsible for the dyshæmopoiesis.

Antihæmophilia Globulins.

Cohn has shown that approximately 60% of fraction I of human plasma is represented by fibrinogen, and that the remaining 40% is a globulin which is capable of dramatically reducing the prolonged coagulation time of hæmophiliacs. Two hundred milligrammes of this globulin given intravenously are as effective as about 100 millilitres of plasma or a larger amount of fresh blood in reducing the prolonged coagulation time in hæmophilia.

The initial dose for a child varies from 200 to 400 milligrammes and should be given intravenously; a similar dose is administered (intravenously or subcutaneously) at intervals of four hours, while necessary.

Acute Infectious Lymphocytosis.

Acute infectious lymphocytosis is now recognized as a disease of infancy and childhood, which can be distinguished from infectious mononucleosis and from the lymphocytic reaction which may be associated with infections during this age period.

This disease, which is usually characterized by a leucocytosis of more than 40,000 or 50,000 per cubic millimetre and a relative and absolute lymphocytosis, usually runs a course of about three to seven weeks. The lymphocytes are small and mature, the spleen and lymph glands are not enlarged, and the Paul and Bunnell test produces a negative response.

In the milder forms there are few symptoms and little or no fever; in the more severe forms there may be fever, abdominal symptoms and meningeal signs.

Familial Acholuric Jaundice.

Damashek persists in his contention that the spherocytosis of familial acholuric jaundice is caused by a specific hæmolysin and is not a congenital abnormality of the red blood cells. Castle admits the possible effect of a hæmolysin in the production of spherocytosis, but maintains that the spherocytosis of familial acholuric jaundice is the result of a congenital defect in the red blood cells.

Castle teaches that the spherocytes are selectively held in the splenic sinuses for long periods, and that as a result of this prolonged stay in the spleen their natural fragility is greatly increased. He and his associates have demonstrated by in-vitro perfusions of spleens with blood containing spherocytes, that the spherocytes are held for unduly long periods in the splenic sinuses. They have also demonstrated that if a child suffering from familial acholuric jaundice is given a blood transfusion prior to splenectomy, his peripheral blood at the time of operation will contain a very high proportion of the donor's red blood cells, while the majority of the red blood cells in the child's splenic pulp will be his own spherocytes. It was found that two or more transfusions resulted in an aggravation of this tendency for spherocytes to congregate and loiter in the splenic sinuses, while most of the donor's red blood cells remained in the peripheral blood; this phenomenon and the associated increase in destruction of the patient's blood cells probably explain the occasional fall in the blood count which may occur after several transfusions in such cases.

"Hypersplenism" ("Splenic Cytopenia").

Damashek suggests that a "hyperactive" and enlarged spleen may exert a selective or a total inhibitory effect on cell delivery from a marrow which presents a selective or a general hyperplasia of its elements. As a result of this inhibitory effect there may be a diminution of white cells or platelets or occasionally a diminution of all circulating cells ("splenic pancytopenia").

By careful exclusion of other possibilities, Damashek defines a group of "primary splenic cytopenias" and emphasizes the excellent response to splenectomy in such cases.

Essential Thrombocytopenic Purpura.

Damashek regards essential thrombocytopenic purpura as a "splenic thrombocytopenia", the result of an hypothetical splenic inhibition of platelet production. He has emphasized the importance of careful examination and enumeration of the megakaryocytes in all cases of essential thrombocytopenic purpura, and has shown that although the megakaryocytes are significantly increased in number there is an obvious diminution in platelet production by mature megakaryocytes. The increase in the total number of megakaryocytes and the diminution in the percentage of megakaryocytes engaged in active platelet production are illustrated by the following figures from Damashek's clinic (Table II). After splenectomy, the total number of megakaryocytes usually falls and the percentage of megakaryocytes involved in platelet production greatly increases.

TABLE II.

Average Counts of Marrow Megakaryocytes. (Damashek.)

Condition.	Number per Million Red Blood Cells.	Percentage Showing Platelet Production.
Normal	182	68·6
Essential thrombocytopenic purpura ..	524	14·4

Congestive Splenomegaly and Portal Hypertension.

The syndrome of congestive splenomegaly or portal hypertension, which includes Banti's disease, is probably more common in infancy and childhood than text-books suggest. It is possible that modern therapeutic methods, by promoting the recovery of newborn infants from the more advanced degrees of hæmolytic disease and from severe forms of generalized infection and umbilical sepsis, may be responsible for an increase in the frequency of portal hypertension, for recovery from the more severe forms of hæmolytic disease of the newborn may be followed by hepatic fibrosis and by some degree of portal obstruction, and variable degrees of portal thrombosis

may follow recovery from severe infections and umbilical sepsis.

Whipple and his associates at the spleen clinic of the Columbia Medical Centre find that intrahepatic obstruction explains approximately 75% of their adult cases of portal hypertension; pædiatric experience suggests that some form of extrahepatic obstruction of the portal system is the most common cause of portal hypertension in childhood. The causes of extrahepatic obstruction of the portal circulation in childhood include congenital vascular defects and deformities, congenital valves, thrombophlebitis, thrombosis and the various causes of pressure on the portal veins. At the recent International Congress of Pædiatrics, Dr. Levine, of New York, showed a young girl suffering from a severe degree of portal hypertension which had been evident since early infancy; this girl was found to be suffering from congenital absence of the portal vein.

Treatment of Portal Hypertension.

Splenectomy.—The advisability of splenectomy may be considered from the following two points of view: (*a*) The effect of splenectomy on the blood picture *per se*. Damashek maintains that the associated anæmia, leucopenia and thrombocytopenia represent a form of "splenic pancytopenia", and that this type of blood picture, or a more limited disturbance, such as thrombocytopenia, prompts splenectomy. (*b*) The effect of splenectomy on the portal hypertension. In a small percentage of cases an obstruction of the splenic vein may be responsible for the portal hypertension, and in such cases splenectomy may produce a complete and lasting cure. In the remaining types of portal obstruction, whether intrahepatic or extrahepatic in origin, removal of the spleen has little or no permanent effect on the portal hypertension. Admittedly this operation relieves the portal circulation of about 40% of its blood, and this may cause a temporary diminution in the portal pressure; but this relief of hypertension is essentially transient, as the portal obstruction has not been relieved.

Anastomosis of the Splenic and Renal Veins.—A lateral anastomosis of the splenic to the renal vein may partially relieve the portal hypertension which follows portal obstruction. Apparently the splenic vein may remain patent for some time after removal of the spleen, so that a recent splenectomy does not necessarily deny the possibility of a splenic-renal vein anastomosis.

Porto-Caval Anastomosis (Eck fistula operation).—Anastomosis of the portal vein and the inferior *vena cava* appears to be the most promising form of treatment for portal hypertension, when the obstruction is intrahepatic. Gross, who had been investigating this problem for some time by means of experimental surgery in dogs, is hesitant about the success of porto-caval anastomosis; but Castle seems more hopeful about the possible success of this procedure. Stuart Welch, of the Pratt Diagnostic Centre, has performed successful portocaval anastomosis of this type on several occasions. Welch takes a series of venous pressure readings, which may include mesenteric veins, the splenic vein and the portal vein, and by this means and by a careful examination of the portal system is able to determine the probable site of obstruction before proceeding with any form of venous anastomosis.

TREATMENT OF THE PETIT MAL TRIAD WITH "TRIDIONE".

During the past two years the value of "Tridione" (trimethyloxazoladine dione) in the treatment of children suffering from the *petit mal* triad has been established by Lennox of Harvard, who has shown that this drug has a specific beneficial effect on the *petit mal* triad of *petit mal*, myoclonic jerks and akinetic epilepsy—conditions which are not usually influenced by anticonvulsant drugs.

This apparent specificity of "Tridione" for the *petit mal* triad and its failure to control *grand mal* or variants of *petit mal* have made accurate classification of seizures an important preliminary to any decision about drug therapy. In this respect, it is important to remember that "Tridione" may aggravate *grand mal*, and that "Dilantin Sodium" may occasionally increase the frequency of *petit mal* attacks. As Lennox puts it:

> Evidence is dawning of specific chemical therapy for specific abnormal wave patterns . . . with the coming of new drugs, the physician's prescription may be tailored to fit the particular type of seizure.

Electroencephalography is a most valuable aid in the recognition of the less typical forms of the *petit mal* triad; the three per second alternating dart and dome pattern which characterizes this group of seizures can be recognized in the normal periods between seizures in about 80% of affected children. If a child suffers from daily seizures, an attack can often be precipitated by the over-ventilation of deep breathing. This method of over-ventilation, which increases the instability of the cortical potentials by inducing alkalosis, is also carried out as a routine measure during electroencephalography.

In view of the relative constancy of the three per second alternating dart and dome pattern of *petit mal*, Lennox refers to this group as "the dart and dome dysrhythmias", and has shown that occasional "problem children", who have not suffered from any obvious seizures, belong to this group and may respond dramatically to treatment with "Tridione".

At the "seizure clinic" conducted by Lennox, children suffering from dart and dome dysrhythmias are treated as follows. "Tridione" (Abbott) is given by mouth in doses appropriate to the age of the child, according to the following table (Table III).

TABLE III.

Age of Child.	Daily Dose of "Tridione". (Gramme.)
Less than 2 years ..	0·3
2 to 4 years	0·6
5 years	0·9

If there is no obvious response at the end of a month, this daily dose is increased by 0·3 gramme. Dosage may be increased in this way until the original daily dose has been doubled or until toxic manifestations have appeared. If there is no obvious response after three months of this treatment, the drug is suspended.

Some children respond dramatically after four to six weeks of treatment. In such cases treatment is continued until there have been no seizures for three months and the electroencephalogram is free of dart and dome formations; the daily dose is then gradually reduced by 0·3 gramme every eight weeks. In many instances there has been no return of the seizures after cessation of the treatment, but it is obviously too early to judge this aspect of treatment.

If progress electroencephalograms are not feasible, the amount of over-ventilation necessary to produce a seizure may be of value as a measure of recovery.

Toxic Effects.

Toxic effects of "Tridione", which include rashes, photophobia, granulopenia and occasionally irritability, usually respond quickly to suspension of the drug.

SURGERY AND CONGENITAL HEART DISEASE.

Patent Ductus Arteriosus.

More than four years ago Gross abandoned simple ligation of the patent *ductus arteriosus* and commenced his present method of complete surgical division of this structure; in June, 1947, he was able to report 153 examples of complete surgical division of the patent *ductus arteriosus* with a mortality rate of only 2·6%.

The traditional indications for operation are as follows: any significant retardation of physical growth or development, any evidence of past or present cardiac embarrassment or the presence of subacute bacterial endocarditis.

These have not altered; but an increasing number of children who do not present any of these signs are being submitted to operation.

Coarctation of the Aorta.

Most cases of coarctation of the aorta may be classified into one of two groups: (i) the "infantile type", in which the constriction usually involves the entire "fœtal isthmus" (from the origin of the left subclavian artery to the site of insertion of the *ductus arteriosus*); this type of coarctation is often associated with other cardiac anomalies, the infant rarely lives for more than a few weeks or months, and operation is obviously out of the question; (ii) the so-called "adult type", which occurs as a localized area of constriction in the neighbourhood of the insertion of the *ligamentum arteriosum*; this is the type of coarctation which is suitable for operation.

Gross points out that, from a prognostic point of view, patients suffering from the "adult" form of coarctation of the aorta may be subdivided into four approximately equal groups: (i) those who have little or no incapacitation and an almost normal life expectancy; (ii) those who die suddenly (usually in the third or fourth decade) from rupture of the aorta; (iii) those whose death may be partly attributed to the hypertensive state (death from cardiac failure or intracranial hæmorrhage); (iv) those who died from superimposed *Streptococcus viridans* infections in a pre-penicillin era.

During the past two years Gross has removed the constricted segment and has repaired the aorta by end-to-end anastomosis in twenty cases with only two deaths. After this operation normal pulsation has appeared in the femoral arteries, and the hypertension of the upper portion of the body has been relieved.

The optimum period for operation seems to lie between six and seventeen years of age. The development of regional sclerosis of the aorta usually makes suture and manipulation of this vessel difficult after the age of twenty years.

The Syndrome of the Double Aortic Arch and Similar Vascular Anomalies.

I have already mentioned the respiratory symptoms which may be produced by the syndrome of the double aortic arch during the neonatal period, and the fact that a persistent right aortic arch may produce a widening of the upper mediastinal shadow very like that associated with enlargement of the thymus.

The respiratory symptoms produced by the pressure of an abnormal aortic arch or one of its branches on the trachea may include cough, wheezing, stridor and even cyanosis. Symptoms of œsophageal pressure are rarely obvious until the infant begins to take solid food.

Radiographic investigation in a suspected case should include barium delineation of the œsophagus in a search for posterior or lateral pressure markings and an attempt to display any tracheal indentation by means of lipiodol instillation.

Gross and his colleagues have now operated in twelve cases of this nature and have demonstrated the dramatic relief which follows division of the abnormal artery.

Tetralogy of Fallot.

The tetralogy of Fallot is the outstanding cardiac malformation of the cyanotic type of congenital heart disease now amenable to surgery.

One of the purposes of the operation, devised by Blalock and Taussig, is to achieve an increased pulmonary blood flow; this is usually accomplished by the anastomosis of a subclavian artery to the side of a pulmonary artery. Recently lateral anastomosis of a pulmonary artery and the aorta has been performed with success and may prove to be the most appropriate operation.

The diagnosis of the tetralogy of Fallot is based on the history and clinical features, on the radiographic investigation, on physiological studies and on laboratory data.

The majority of these infants exhibit some degree of cyanosis at birth, which is often intensified between the ages of twelve and eighteen months, possibly as a result of the closure of the *ductus arteriosus*. At the age of about four to eight years the establishment of a collateral circulation through bronchial and mediastinal vessels may result in a slight diminution of both cyanosis and symptoms.

Breathlessness and distress after effort vary with the degree of pulmonary stenosis, with the extent of any collateral circulation and with other features. The child usually squats on his haunches when breathless, or if very distressed, adopts the "knee-elbow" position.

The systolic murmur of maximum intensity over the pulmonary area is essentially non-specific in character and may be absent in the more severe forms of pulmonary stenosis.

The classical radiographic features are as follows. (i) The cardiac shadow is usually normal in size and has the typical *"cœur en sabot"* shape. (ii) The "aortic window" as seen in the left oblique position is surprisingly clear. (iii) The diminished pulmonary circulation is evident in the lung fields, where no hilar pulsations are visible and vascular markings are minimal. An œsophogram will demonstrate the position of the aortic arch, which is on the right side in about 25% of cases.

Physiological Studies.

Richard Bing and his colleagues at the Johns Hopkins Hospital have carried out a number of physiological studies of congenital heart disease during recent years, and have developed methods which are of particular value in the accurate diagnosis of certain cases. Bing's standard exercise test, which represents a most important practical step in diagnosis, is based on the fact that the ratio of oxygen consumed per litre of pulmonary ventilation rises during exercise if the pulmonary flow is normal or increased, as in Eisenmenger's complex, but falls during exercise if the pulmonary flow is obstructed, as in the tetralogy of Fallot.

Other physiological studies, which are not essential but may be of importance in the assessment of certain cases, include the assessment of intracardiac pressures and the oxygen content of specimens of cardiac blood by means of catheterization of the right side of the heart and of the pulmonary artery. The classical electrocardiographic changes include right axis deviation and the presence of very high and pointed *P* waves in the second lead.

Indications for Operation.

The following factors may be of help in deciding whether operation is advisable: the degree of limitation of response to physical effort, the frequency of attacks of paroxysmal dyspnœa and cyanosis, the presence of marked degrees of polycythæmia and the associated hazard of cerebral thrombosis. Contraindications to operation include: (i) any suggestion of a normal or increased pulmonary blood flow; (ii) severe degrees of atresia of the pulmonary artery, which would make anastomosis impracticable; (iii) the compensation of a patent *ductus arteriosus*, which makes operation inadvisable in all but exceptional cases.

In borderline cases, estimations of the arterial oxygen tension will be of help in deciding for or against operation, as a successful operation will not achieve an oxygen saturation higher than 70% to 85%.

Optimum Age for Operating.

In early infancy small vessels and other factors make this operation difficult and hazardous; Blalock recommends three to twelve years as the optimum age period.

Results of Operation.

During the past three years Blalock and his colleagues have performed this operation on approximately 400 children, the mortality rate for their last 350 operations being 15·6%. More than 70% of these children have shown a dramatic improvement after operation; the cyanosis has disappeared, the arterial oxygen saturation has been raised from a level of perhaps 20% to 30% to

a level of 70% to 85%, the number of red blood cells, the hæmoglobin value and the hæmatocrit readings have fallen to normal levels, the attacks of paroxysmal dyspnœa and syncope have ceased, and there has been a pronounced improvement in the response to physical exertion.

There are those who question the physiological righteousness of this operation and its artificial *ductus arteriosus* and who doubt whether the opening in the pulmonary artery will remain adequate in size as the child grows. These critics also argue that the results achieved by Blalock and others are possibly only temporary, and that this operation does not diminish the chance of early cardiac failure and may even aggravate the hazards of subacute bacterial endocarditis. Whatever the final answer to such criticism may be, this operation is bringing temporary comfort and happiness to many children and their parents.

CONCLUSION.

In conclusion, I wish to express my gratitude to the Carnegie Corporation for the award of a fellowship which has made it possible for me to learn something about modern pædiatrics.

THE PSYCHIATRIST AND SOCIETY.[1]

By IRENE SEBIRE,
Sydney.

The province of psychiatry is expanding so rapidly that the profession may be in some danger of being lost in a maze of related interests and considerations unless it recognizes the need for clarifying its function and its objectives. Psychiatrists have progressed beyond the more circumscribed limits of the former alienist whose knowledge was gained largely in the precincts of a mental hospital. Here his relative isolation provided little opportunity to relate the patient's reactions to the social situation in which they occurred, nor to modify that situation to make later adjustment possible in suitable cases. His approach to "inaccessible psychotic patients had in general, little bearing on the treatment of accessible psychoneurotics", to quote Dr. Crichton-Miller.

Inevitable detachment from the community limited his own social contacts and tended to obscure his appreciation of the standard of everyday normals. He was, on the whole, applying himself to those end-products of society, those socially defective persons, who in the majority of cases were unlikely to return to the responsibilities of community life, and for whom custodial care was indicated. Psychiatry has gradually extended its interest to cover the function of mental processes and emotional reactions as they range from incurable psychotic states, and psychoneurotic conditions, to those circumstances which make for optimum mental health.

The psychiatrist is concerned primarily with the investigation and treatment of disordered conduct and variations in the behaviour of the individual. These he seeks to interpret not only in terms of the individual's physical constitution and intellectual equipment, but also in relation to the standard of behaviour accepted as normal in the social group to which the individual belongs. The psychiatrist endeavours to measure the patient's total performance in a series of changing environments as he attempts to adjust himself to his immediate social situation. This situation is the initial point of reference, the unit of operation, and extends beyond the individual to cover not only his relationships to his family, his employment and his neighbourhood, but also the cultural pattern of the community of which he is a member.

The patient brings to the psychiatrist not only himself, but his wife, children, grandparents, friends—in short, all those persons who have contributed both hereditarily and socially to his total personality development. One might suggest that the psychiatrist brings to the interview also his own personal contacts and experiences, which might be just as barren as those of the patient he is treating.

His observation and interpretation of human behaviour may be prejudiced or clarified by the concepts and ideologies he has accepted. Thus he cannot afford to dissociate himself from the broader aspects and implications of the culture to which both he and his patient belong, however different may be their respective social status. Psychiatrists vary in their degrees of insular detachment. While thoroughly informed of the mechanisms of projection and compensation, some may be woefully ignorant of the everyday conditions in which the patient is attempting to find his emotional satisfactions. It requires a person of broad sympathies, of extensive experience with other human beings, with a personal knowledge of how people live in a variety of social strata, to appreciate and interpret the aspirations and disappointments of inadequate personalities. The psychotherapist will need to combine personal experience with his theories if he hopes to direct effectively the patient's life and succeed in reeducating him along lines related to his needs.

Psychiatry seeks to discover and formulate the laws of human personality, and its peculiar field is the study of interpersonal phenomena. Personality, which has been defined as "the socialization of the self", is made manifest only in the interpersonal situation. Thus the maladjusted person will need to be regarded as a component part of a group, and his problems related to the social values of that group. His measure of social defectiveness cannot be traced to its origins satisfactorily in the absence of an appreciation of his social contacts and an awareness of the cultural pressures and changes to which he is subjected. Adjustment needs to be defined in terms of conventionally accepted standards of behaviour, which are determined by the culture or totality of socialized habits to which he is required to conform.

But is the psychiatrist always clear as to the conditions to which the patient is attempting to accommodate himself? We often think of social adjustment as though the cultural pattern were static, instead of fluctuating in response to both individual needs and developing community pressures. The strain of alternate patterns, in competition or conflict with each other, may be responsible for the vagaries in the behaviour of normal people, or for the more pronounced symptoms of social inadequacy in persons who find cultural demands excessive or intolerable. However we classify the resulting psychological phenomena, on the whole we think in degrees of "social adaptation or social adjustment" in evaluating the breakdown and confusion which result from conflicting ideologies, and social disorder in the face of economic, political and religious factors. These form part of the reality from which the unfortunate patient is exhorted never to retreat, even though neither he nor the psychiatrist may have much idea of the condition or strength of the opposing forces.

The psychiatrist requires to be a sociologist, to understand the dynamics of culture and of society, if he wishes to relate the personal problems of the individual to the relatively impersonal behaviour of community groups. William White in referring to interpersonal relationships supported the principle that the individual as a psychobiological unit does not cease to function as a psychosociological unit, and that the psychiatrist must have a thorough knowledge of this psycho-social functioning. Our chief limitation according to Dr. Macfie Campbell is that "most mental hygienists are trained psychologically to look for biogenetic determinants, rather than sociologically, to look for social determinants".

Social psychology is generally defined as a study of the behaviour of the individual in a group situation. Surely the psychiatrist must have much in common with the social psychologist, and may need to become more "culture conscious". The social environment is related intimately to the customs, the traditions, the cultures and

[1] Retiring president's address delivered at the annual meeting of the Section of Neurology, Psychiatry and Neurosurgery of the New South Wales Branch of the British Medical Association on December 11, 1947.

the *mores* of any particular community. It is in this area that the individual encounters conditions in which he experiences successes and defeats, happiness and disappointments. His reaction may be due in part to his own inadequacy, but his limitations become actualities in the social situation. Many of the variations of conduct or behaviour are discernible only in terms of the patient's relationships with other persons in some given intellectual, cultural, social or moral system.

Mental and nervous disorders may be determined by causes not altogether social. There are psychological consequences of brain injury, alcoholism, drug addiction, syphilis and other physical diseases, but even these factors have a social aspect. The mental defective is unable to function adequately in an environment which is not tempered in keeping with his incapacity to measure up to expected conduct, educational standards and the responsibilities of employment and citizenship. The schizophrenics with their characteristic solitariness and repudiation of social obligations, the psychoneurotics with their anxieties, obsessions, and exaggerated fatigue, are examples of distintegrated personalities with symptoms of social, moral or intellectual inadequacy. All these present the problem of variations in behaviour in spite of the uniformities imposed by culture, and a divergence in the ultimate norms which unify society and bind together specialized groups.

The recent development of abnormal psychology represents something of a movement from the purely biological to a more social interpretation of conduct. But it does not deny the biological or physiological bases of abnormality. The very concept of normality may require restatement for each culture, while contradictions in the demands and values of any one culture may constitute possible sources of emotional disturbance. The family situation may give rise to conflict, and children respond to the accepted pattern of obedience to parental authority in contrasting emotional attitudes. The changing status and function of the family unit, marked in this generation, make parent-child relationships more complicated and confused. Ignorance of these trends will limit the understanding of the psychiatrist who attempts to interpret the temporary disruption of the traditional functioning of the family. Nor will he be any better equipped if he seeks to account for marital disharmony without appreciating the change in outlook and status of the modern wife and her excursions into areas only remotely associated with housekeeping. He will need to know something also of the so-called "fashions of abnormality", those nervous disorders which emanate from our very social groupings: the mass reactions of the mob and the crowd.

Psychiatric concentration upon the individual, often to the exclusion of society, has delayed consideration of the broader issues of mental hygiene in the community. Our limitation in numbers has probably precluded any development in the field of industrial psychiatry, any research into criminology, juvenile deliquency, dependency, sex offences, prostitution *et cetera*. These are social problems, admittedly, but they are problems to which the psychiatrist is equipped to make a contribution.

The industrial psychiatrist applies psychiatric methods and principles to a specific part of a social situation, one in which particular problems arise peculiar to industrial conditions and in which the limitations of the individual are revealed by the stresses of industry just as they are by the stresses of war. The demands of employment may provide provocative and precipitating factors in the causation of neurotic symptoms in the already socially incompetent person.

As a phase of preventive medicine the industrial psychiatrist aims at detecting maladaptation, forestalling serious mental breakdown and rendering psychiatric first aid to emotional casualties. He is in a position to apply mental hygiene principles to a social group, to protect the normal from undue strain, to control borderline susceptible subjects, and to coordinate resources and facilities within an industrial set-up to ensure as far as possible maximal mental health.

The industrial psychiatrist is enabled to apply an approach which has a new socio-medical synthesis. The chief difference between psychiatry in private practice and in industry is that in the latter the whole company is the patient, not the individual worker as such. The maintenance of a healthy and vigorous whole organization will take into account every person from the director to the cleaner, and will be related to the functioning of each in an industrial group to which he brings his personal qualities and characteristics.

Rehabilitation of injured workers and the problems pertaining to compensation, absenteeism or invalidism which has become superimposed on a preexisting disability or neurosis, are typical of areas which call for the practice of psychiatry within a specific social group.

It was the social implications of juvenile delinquency which transferred the interest of Dr. William Healy from the individual delinquent to the social situation in which the offence occurred. He examined the environment from the viewpoint both of causation and of constructive potentialities. The work of Clifford Shaw in his Chicago project emphasized the significance of social factors in determining the incidence and nature of criminal and delinquent behaviour. Juvenile offences occur with greater frequency in areas where a traditional delinquency pattern has developed. An examination of any juvenile offender is relatively futile unless his behaviour is measured against the standards of conduct accepted by the majority in his social group.

Burt demonstrated that the correlation between delinquency and density of population and poverty was approximately 0·7 in both instances. Conflict of cultures was considered by Glueck to be responsible for the fact that the incidence of delinquency among children born of foreign parents is higher than that among those of native-born parents. He found also that the conflict between the old European culture pattern and the new American one was considerable, with delinquent behaviour a frequent sequence. The concept of culture must be seen, however, within the total content of associated social and economic factors.

The coordinated effort of members of a child guidance clinic is based on the assumption that the total reactions of a maladjusted child constitute a social as well as a personal experience. Interest extends beyond the child to include his parents, siblings, associates and social contacts in the neighbourhood. His environment is explored, *vis-à-vis* the physical constitution and intellectual equipment of the individual child, to ascertain the reasons for his social defectiveness, symptoms of which are the initial reason for reference. The entire family is subjected to scrutiny in regard to the interrelationships of its members, the example and attitude of the parents, their ethical standards and cooperative possibilities. Investigation and treatment of the child's difficulties have a social as well as an individual significance.

The increasing interest, not always accompanied by knowledge, of the public in psychological matters has been stimulated by current literature, Press articles, films, radio, and first-hand acquaintance with the emotional casualties of war. Practising psychologists and trained social workers are working in association with psychiatrists or independently, applying psychological principles to their investigations and case work. Contacts are developing between psychiatrists and nurses, religious workers, education authorities, industrialists, youth leaders and others who are seeking a more reliable understanding of human behaviour and motivation. The popularization of psychological interpretation amongst the untrained may result in indiscreet psychiatric "window-shopping", but it is certainly a challenge to those mental hygienists concerned with the emotional well-being of the community.

This would seem to indicate that the period of professional isolationism in psychiatry is coming to an end. Psychiatrists will be faced with the choice of practising remotely in their consulting rooms, or accepting, as well, the responsibility of combining with their interest in individuals some concern for the mental health of society. The problem of mental health goes beyond individual

diagnosis and therapy and calls for a psychiatric orientation of social welfare. Mental hygiene is a social movement and covers not only individual but mass needs. It is concerned with the promotion of personal efficiency and the provision of conditions which make for personal happiness. But these need to be related to local customs and social institutions, many of which are outmoded and no longer serve the purpose for which they were primarily intended.

It may be said that the psychiatrist is not called upon to be a social reformer. But if he is a student of social psychology and cultural organization, he is in a position to demonstrate to his patients the social implications of their symptoms in terms of the need for cultural as well as personal readjustments. Mental hygiene societies can then translate such findings into interpretive publicity and may even endorse major changes in such cultural conditions and public attitudes as have provided the sources of mental conflict. The psychiatrist may decide that he is required to concentrate only upon the social manipulation of special or limited environments; but he should be able to express an authoritative opinion and provide leadership to a community for the prevention and remedy of those social factors which cause psychiatric illness. The social contribution made by specialists concerned only with individuals is negligible compared with that which they can make to constructive health programmes and the broader aspects of the social life of the community and racial betterment.

Psychiatry is no longer that specialty of medicine which deals solely with mental disorders. Its horizon has extended far beyond the limitations and circumscribed area of what is generally termed a specialty. As a study of disordered conduct, has it not become intimate with ethics, with cultural anthropology and sociology, with metaphysics and religion? The mission and range of psychiatry are bewildering indeed, and probably beyond the capacity of any one psychiatrist. But the concept of psychiatric practice must be broadened and elaborated if the profession is to establish a tradition of community service and fulfil its obligation to society.

POLIOMYELITIS AND GASTRIC ACIDITY.

By PHYLLIS G. ASHWORTH,[1]
Melbourne.

THE hypothesis was developed that an association might exist between deficiency of hydrochloric acid and incidence of poliomyelitis.

It was decided to investigate the gastric acidity of persons over ten years of age who developed poliomyelitis in the 1945-1946 epidemic. Approximately one year after the onset of disease, during the summer and autumn of 1946-1947, examinations were made on patients in Victoria. Of the 228 survivors over ten years, 91 were investigated; 42 of these were from the metropolitan area, 36 were from scattered rural areas, and 13 were service personnel who contracted poliomyelitis in Australia and the Pacific area.

The whole of the laboratory work—that is, preparation of the Boas meal and the aspiration and analysis of gastric specimens—was carried out by one investigator; thus variations in technique were eliminated.

The results in these cases, classified by the secretory curves according to the method of Bell,[1] are compared in Table I with those recorded in three series of normal young men.[2][3][4]

Conclusion.

There is no evidence that the gastric acidity of the population with poliomyelitis has a different distribution from that of a normal population.

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(3) M. McC. Baird, J. M. H. Campbell and J. R. B. Hern: "Gastric Secretion, Physique and Physical Fitness", *Guy's Hospital Reports*, Volume LXXIV, 1924, page 339.

(4) F. L. Apperly and K. Semmens: "Fractional Test Meals in Normal Students: A Comparison of Results with those of Other Observers", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, 1928, page 237.

THE EFFECT OF ELECTROLYTES ON THE Rh AGGLUTINATION REACTION.

By R. J. WALSH,
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BLACK[1] has shown that in A B O blood grouping the agglutination appears more rapidly when the red cells are suspended in 1·7% sodium chloride solution than in 0·85% solution. A solution containing 0·85 gramme of sodium chloride and four grammes of glycine (aminoacetic acid) per 100 millilitres gave the same results as 1·7% saline solution. Similar effects were observed with trisodium citrate solutions, agglutination appearing more rapidly with the red cells in 4% solution than in the isoplethecontic 2·6% solution. The titre of α and β agglutinins, however, was found to be independent of the electrolyte environment. Black also observed (unpublished work) that the more concentrated electrolyte solutions interfered with the interpretation of the Rh reactions. Recently this aspect has been more carefully investigated and the results are described in this report.

Methods and Material.

Fourteen specimens of serum containing the anti-D (anti-Rh_o) agglutinin, two containing the anti-E (anti-Rh″) and one containing the anti-C (anti-Rh′) agglutinin were used in the investigation. Suspensions of Rh_1 and

[1] Working with a research grant from the estate of the late Thomas Smith, administered by the Victorian Division of the Australian Red Cross Society.

TABLE I.
Secretory Curves of Patients with Poliomyelitis Compared with those of Normal Controls.

Subjects.	Number of Subjects.	Achlorhydria. (Percentage.)	Hypochlorhydria. (Percentage.)	Normal Gastric Acidity. (Percentage.)				Hyperchlorhydria. (Percentage.)
				Low Normal.	Normal.	High Normal.	Total Normal.	
Series of Bennett and Ryle[2]	100	4	1	10	59	18	(87)	8
Series of Baird, Campbell and Hern[3]	57	2	7	26	40	14	(80)	11
Series of Apperly and Semmens[4]	90	8	4·5	5·5	42	19	(66·5)	21
Above groups combined	247	5	4	12	49	17	(78)	13
Poliomyelitis patients	91	3·5	5·5	10	37	27·5	(74·5)	16·5

Rh_0 red cells were used against the anti-D agglutinins, of Rh″ cells against the anti-E agglutinins and of Rh_1 cells against the anti-C agglutinin. The cell suspensions were prepared in sodium chloride and sodium citrate ($Na_3C_6H_5O_7.2H_2O$) solutions of various concentrations. Titrations of the agglutinins were performed in test tubes by the method previously described,[3] the red cell suspensions containing 0·5% red cells (packed volume). In every instance the solution used for suspending the red cells was also used for diluting the serum. The slide method of Graydon and Simmons[5] was used in a similar manner, but the red cell suspensions contained approximately 3% of red cells by volume. The Coombs test was performed as described by Montgomery.[4]

Results.

The majority of anti-Rh agglutinins failed to agglutinate the corresponding Rh-positive cells when the cells were suspended in sodium chloride solutions stronger than 1·25%. The action of the remainder was inhibited partially in 1·5% solution and completely in 2% solution. With one exception, all the specimens of serum gave stronger reactions and the titre of the agglutinin increased as the strength of the saline solution decreased. Optimal results were obtained with 0·5% solution. A typical protocol is shown in Table I.

TABLE I.
Anti-Rh_0 Serum Against Rh_1 Cells.[1]

Strength of Saline Solution.	Dilution of Serum.					
	1:2	1:4	1:8	1:16	1:32	1:64
2·0%	−	−	−	−	−	−
1·5%	−	−	−	−	−	−
1·25%	−	−	±	−	−	−
1·0%	±	+	+	−	−	−
0·75%	+	++	++	++	+	
0·5%	+	+++	++++	++++	++++	+++

[1] "−", no agglutination; "±", very weak agglutination; "+", agglutination.

Similar results were obtained with sodium citrate solutions. Even with the most potent sera, the strongest agglutination and the highest titre of the agglutinin were obtained when the solution used for diluting the sera and suspending the red cells was less than 2%. Some specimens of serum were almost completely inhibited when the solution was stronger than 2%. It appeared that a 1·5% sodium citrate solution was the most satisfactory.

Two specimens of anti-D serum failed to agglutinate Rh_1 cells in 0·9% sodium chloride solution, but were active in 0·5% solution. Both had been prepared by the clotting of oxalated plasma with calcium chloride solution, and it is possible that they contained an excess of ionized calcium. The resulting high electrolyte concentration would interfere with the agglutination reaction. No serum obtained from clotted blood and containing complete or agglutinating Rh antibodies was encountered which failed to react in 0·85% sodium chloride solution. Provided that the sodium chloride solution used is accurately prepared and that the serum is obtained from clotted blood, it is unlikely that agglutinating antibodies will be overlooked or called incomplete antibodies in the routine testing of serum.

When glucose or glycine was added to 0·5% sodium chloride solution or to 1·5% sodium citrate solution in relatively large amounts (four to eight grammes per 100 millilitres of solution), a definite inhibitory effect was produced on the agglutination reaction. Smaller amounts of either substance (one gramme per 100 millilitres of solution) did not appear to alter the degree of agglutination or the titre of the agglutinin, nor did they remove the inhibitory effect of the more concentrated electrolyte solution. It was observed that cells agglutinated in 0·5% sodium chloride solution or in 1·5% sodium citrate solution were easily dispersed. The addition of small amounts of glucose to the solutions prevented this to a large extent.

Experimental Investigation.

The manner in which the stronger electrolyte solutions inhibit visible agglutination was demonstrated by two experiments.

Experiment I.

Samples of a serum (H) with a strong anti-D agglutinin were diluted ten times with 2%, 1% and 0·5% sodium chloride solutions. An equal volume of 1% red cell suspension in the same saline solution was added to each of these samples. At various intervals after the mixing, the cells were washed with the sodium chloride solution used and then resuspended in 0·85% solution. After light centrifugation the cells were examined for agglutination and the Coombs test was performed on each specimen.

The results of one of these experiments are shown in Table II. The first stage of the agglutination reaction, which is known to be rapid, is apparently delayed but not inhibited by the higher electrolyte concentration.

TABLE II.
Delay of First Stage of the Agglutination Reaction.[1]

Strength of Saline Solution.	Agglutination on Resuspension in 0·85% Solution.				Coombs Test.			
	5 mins.	10 mins.	20 mins.	30 mins.	5 mins.	10 mins.	20 mins.	30 mins.
2·0%	−	−	−	−	−	−	±	+
1·0%	−	−	−	±	−	+	+	+
0·5%	−	−	±	+	+	+	+	+

[1] "+", positive result; "±", doubtful result; "−", negative result.

Experiment II.

Suspensions of red cells in 2% and in 0·5% sodium chloride solution were mixed with equal volumes of serum diluted ten times with saline solution of the same strength. The mixtures were allowed to remain at 37° C. for ninety minutes. Agglutination was observed in the 0·5% saline mixture, but not in the 2% saline mixtures. After being washed, the cells were suspended in the saline solutions of the opposite strengths; that is, those previously in the 0·5% solution were washed with the 0·5% solution and then suspended in the 2·0% solution and *vice versa*. The cells were incubated for a further ninety minutes and then lightly centrifuged. Those cells which were previously agglutinated had dispersed, whereas agglutination was now observed in those mixtures in which it was previously absent.

Consistent results were obtained with three different specimens of serum and with a variety of red cells. As expected, those cells previously agglutinated but later dispersed by the 2% solution gave a positive response to the Coombs test. Higher electrolyte concentrations therefore inhibit the second stage of the agglutination reaction.

Discussion.

The effect of electrolytes on the Rh agglutination reaction differs from that on the A B O reaction, in that (i) higher concentrations inhibit the visible reaction, and (ii) the titre of the Rh agglutinin varies significantly with its electrolyte environment. Further, the addition of glycine to the electrolyte solutions in amounts which enhance the A B O reaction retards the Rh reactions. No explanation of these differences is offered, but they are not surprising in view of the other known differences between the two antibody systems. It is unlikely that the electrolyte environment distinguishes immune from natural antibodies.

The significance of the results lies in the fact that the salt solution used for suspending the red cells must be carefully controlled. If the sodium chloride solution used contains more than one gramme per 100 millilitres of

solution, false Rh results may be obtained. The following solutions have been found most satisfactory for Rh tests: (i) sodium chloride 0·5 gramme, glucose 1·0 gramme, water 100 millilitres; (ii) sodium citrate 1·5 grammes, glucose 1·0 gramme, water 100 millilitres.

It is of interest that workers[5] at the Commonwealth Serum Laboratories, Melbourne, have frequently obtained better results when red cells are suspended in Rous and Turner's solution than in 0·85% sodium chloride solution. Rous and Turner's solution contains 1·09 grammes of sodium citrate and 3·86 grammes of glucose per 100 millilitres of solution.

Summary.

High concentrations of electrolyte inhibit the Rh agglutination reactions. The first stage of the reaction is delayed, but not completely inhibited, whereas the second stage is completely inhibited. The reaction occurs most strongly, and the titre of the agglutinin is greatest, when 0·5% sodium chloride or 1·5% sodium citrate solution is used for suspending the red cells and diluting the serum.

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Reviews.

A BOOK OF MEDICAL ESSAYS.

NEARLY a century ago a fine old Edinburgh physician published a number of essays which happened to be the fruitful product of his leisure hours, and he gave it as one of the chief motives for deciding to reveal these "odds and ends", as he called them, that he wished to mark his approval of the intellectual and literary culture so characteristic of the days of Sydenham, Arbuthnot and Gregory, "when a physician fed, enlarged and quickened his entire nature; when he lived in the world of letters as a freeholder, and reverenced the ancients, while at the same time he pushed on among his fellows, and lived in the present, believing that his profession and his patients need not suffer, though his 'horæ subsecivæ' were devoted occasionally to miscellaneous thinking and reading . . ." These delightful essays of Dr. John Brown still live in our minds and hearts, perhaps because of his own conviction that no writer should think of publishing his material "unless he has something to say, and has done his best to say it aright". Now another book of essays has been written, this time in the leisure hours of a practising surgeon specialist in Dublin, for his own relaxation and for the entertainment of his busy colleagues so that they might share his interest in the fascinating story of medicine.

This volume containing Dr. William Doolin's collection of "odds and ends" under the title of "Wayfarers in Medicine"[1] may be read with profit and enjoyment by all who appreciate thought in the art of presentation and fluency in the manner of expression. With becoming modesty the author makes his literary offering by first of all disclaiming any pretentions to profound scholarship or to the possession of that species of ripe erudition expected of a professional medical historian. Nevertheless he seems to have succeeded in producing a number of charming essays with an obvious leaning in the direction of his own professional inclinations, the evolution of anatomy and the development of surgery.

The essays range through the whole cycle of medical history from Imhotep, the Egyptian god of medicine, to the more prosaic surgical scientists of modern times. Particularly interesting are the chapters on John of Arderne (whose manuscript copy of the "Practica" was discovered in the library of the Royal College of Surgeons in Ireland a few years ago), "In the Days of Vesalius", "The Anatomist in Art", "The Early Lithotomists" and "A Surgeon of France".

It may be as well to draw attention to a few noticeable points in the text where some clarification seems necessary. In the first chapter the writer gives priority to Champollion, the Frenchman, for deciphering hieroglyphic characters, instead of giving the credit to Dr. Thomas Young, who gave the first lead in 1814 after translating the inscriptions upon the Rosetta Stone. It is also stated that Jacques du Bois, the Sylvius of the sixteenth century, was connected with the fissure of that name, whereas the discoverer was Franciscus, the Sylvius of the next century. Again, the author says that an accidental inoculation with syphilis led John Hunter to recognition of the distinction between gonorrhœa and syphilis. Actually the great surgeon failed to make clear the distinction in spite of his heroic experiment, so that it remained a confused issue until Benjamin Bell and Philippe Ricord drew the definite line of demarcation. Finally, Professor Joseph Lister commenced his work at the Glasgow Infirmary in 1860, and not in 1865 as stated in the text.

The book is adorned with many useful and unusual illustrations, and there are bibliographical notes at the end giving the sources of information used by the author for each essay. Altogether these essays are thoroughly entertaining, and librarians might do something to encourage the habit of miscellaneous thinking and reading in us by having the book upon their shelves.

[1] "Wayfarers in Medicine", by William Doolin; 1947. London: William Heinemann (Medical Books), Limited. 8½" × 5½", pp. 294, with many illustrations. Price: 21s.

ALLERGY.

THIRTY years ago, when the so-called allergic diseases began to attract widespread interest, a few uncritical authors did great disservice to this important section of medicine by their unbalanced claims. Since then the discovery of many new facts and the failures of methods of treatment based on false theories have had a chastening effect, so that recently published books tend to emphasize the difficulties of treatment and to display the surviving theories in a better perspective. H. L. Alexander's "Synopsis of Allergy",[1] written by a physician, obviously of wide experience, shows these characteristics, and its two hundred and forty pages are full of facts and sound advice. Of interest is the author's view that the development of emphysema can be delayed and minimized by careful control of each asthmatic attack by adrenaline. However, his views on the causes of asthma are rather limited, the importance of reflex effects is not sufficiently emphasized, and diathesis is mentioned only indirectly. This is a pity, as it is obvious that the treatment of chronic diseases will be effective in proportion to the clarity with which we understand the causes.

The section on preparation of extracts of allergens is rather antiquated and the index is altogether inadequate. However, some defects of this little book are due to a commendable desire for brevity, and, generally, it gives a good, compact and critical summary of present knowledge. Many useful tables are included, the type is very clear and the format excellent. Students and practitioners who have no time to read larger textbooks will find here most of the essential facts without the padding.

DIABETES MELLITUS.

"DIABETES MELLITUS IN GENERAL PRACTICE", by Professor Arthur Colwell, is another publication by The Year Book Publishers.[2] The book is well printed on good paper and the figures are clear and to the point.

The opening chapter is devoted to general characteristics of the disease. The history of the disease and of the discovery and elaboration of insulin is well summarized.

[1] "Synopsis of Allergy", by Harry L. Alexander, A.B., M.D.; Second Edition; 1947. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7¾" × 4¾", pp. 256, with illustrations. Price: 30s.

[2] "Diabetes Mellitus in General Practice", by Arthur R. Colwell, M.D.; 1947. Chicago: The Year Book Publishers Incorporated. 8" × 5½", pp. 350, with illustrations. Price: $5.25.

Eight pages on the course and rate of progress are good and provide much food for thought. The author deduces that diabetes is inherent at birth, and that "before it is recognized in clinical practice it progresses through a stage the magnitude of which is fully as great as that of the known diabetes which follows recognition".

The chapter on diagnosis gives an extensive list and classification of the "meliturias". It follows orthodox lines. Besides the more usual sugar tolerance test another, the Exton-Rose test, is discussed. The chapters on treatment are clear. The author's own diet prescription forms and his own methods of prescribing diets are shown in detail. They are simple. Perhaps as this is describing diabetes in general practice some help here from the diabetic kitchen would have been useful. The preparation of special dishes for diabetic patients would be helpful for the practitioner and his patients. The various forms of insulin and particularly the use of mixtures are described at length.

Complications are divided into acute and chronic. Stress is laid on the infection of the skin and mucous membranes with fungi. The chapter on chronic complications is particularly well done. A section is devoted to intercapillary glomerulosclerosis. The section on pregnancy and diabetes includes mention of Priscilla White's work on hypo-ovarianism and replacement thereby with stilbœstrol and progesterone. This section is also thought provoking.

Throughout the book stress is laid on what is known and debatable questions and theories are analysed as far as possible.

The general layout of the book is good and each chapter has its own bibliography, mainly from American sources, and the general index is good. The book can be recommended to those interested in the study and treatment of diabetes.

APHORISMS AND REMINISCENCES.

A CONSULTING PHYSICIAN to the Derbyshire Royal Infirmary, after devoting nearly fifty years of his useful life to the conscientious practice of his profession, now finds enough time on his hands to reflect upon his varied experiences and to give us his impressions, sometimes with humour and often with aphorisms, in a small book which he has called "The Occasion Fleeting".[1] Quite obviously the author, Dr. Hugh Barber, has extracted the phrase from the first and best known of the Aphorisms of Hippocrates, and it would seem that in the selection of this title a realization of the implications contained within the complete Aphorism was clearly before his mind. In recalling the ghosts of the past, he wonders whether he has succeeded in catching the right spirit of medical practice throughout that brief period when the fleeting occasion came to him between the war in South Africa and the last world war. After all, it can hardly be called irrational to suggest that the short span which covered nearly fifty years of active hospital and private practice was barely enough in which to gain a clear insight into the mystery and art of medicine, particularly in view of the sad reminder that experience is often fallacious and judgement always difficult.

It may well be that the recent graduate in medicine would consider the opinions and outlook as reflected in the pages of this book as a little old fashioned and out of step with the ultrascientific tendencies of modern times. However, it must be apparent that the author has "lived in fellowship with the great minds of the race", that his writing is inspired by a high-minded approach to the sacred obligations of his calling as a physician, and that there is a great deal of wisdom and common sense in his philosophy.

A YEAR BOOK OF ORTHOPÆDICS AND TRAUMATIC SURGERY.

AN alteration has been made in the title of the Year Book series which formerly dealt with industrial and orthopædic surgery, and the latest volume appears as "The 1947 Year Book of Orthopedics and Traumatic Surgery".[2] The new editor, Edward L. Compere (who has succeeded the late Charles F. Painter), explains that no radical changes have been made in editorial policy. "The title has been changed because most of the material in the current literature on industrial surgery could be more correctly classified as orthopedic or traumatic surgery." Incidentally, the only traumatic surgery included is that which may reasonably be included in the province of the orthopædic and industrial surgeon.

A brief, quite gracious introduction, very frank though rare comments and a wide discriminating selection of material combine to ensure confidence in the new editor. He has abstracted articles by authors from the United States, Canada, South America, Britain, the Continent and Australia—the last mentioned being represented by an article by L. J. A. Parr and Eva Shipton of Sydney on the treatment of rheumatoid and infective arthritis by sulphonamides and one by Michael Kelly of Melbourne on fibrositis and the common pains of daily practice. The abstracts are grouped into sections on poliomyelitis, congenital deformities, nutritional and metabolic diseases, tuberculosis, osteomyelitis and other infections, tumours, cysts and fibrodysplasia, arthritis and rheumatism, fractures, dislocations and sprains, lesions of the spine and pelvis, of the neck, shoulder and upper extremity, of the hip, leg and knee, and of the feet, amputations, surgical technique, instruments and appliances, and miscellaneous subjects. Illustrations are numerous and of the high quality characteristic of the production of the whole volume. This Year Book can be confidently recommended to all those interested in the recent literature on orthopædics and traumatic surgery.

LAW IN AUSTRALIA.

WHEN Moses came down from the mountain, he gave his laws to the children of Israel in ten short paragraphs that may be learned by an intelligent child in an afternoon. The library of a twentieth century lawer, to be adequate, covers the walls of his chambers. In a modern society an increasing complexity of human relations has produced an enormous mass of law which, in the British view, defies codification.

It is possible, however, for non-lawyers to acquire some knowledge of the scope of law, the nature of the courts and their task of ascertaining and enforcing rights and obligations. All responsible citizens should endeavour to take an interest in these matters. As Sir Paul Vinogradoff once wrote: "All those who pay taxes and own property of any kind, who hire or supply labour, who stand on their rights and encounter the rights of others are directly concerned with laws whether they realize it or not. . . . In any case, every member of the community takes his share in the formation of public opinion, which is one of the most potent factors in producing and modifying law."

No two professions are brought together on common ground more frequently than those of medicine and law, and the desire of their members for closer understanding has been displayed in the creation of medico-legal societies in Britain and in some parts of Australia. For these reasons and for its intrinsic interest Mr. Baalman's book[1] is one that should be widely read.

The author's approach to the subject is stated in the following words of the preface: "The aim has been simply to provide a conspectus of modern law with an historical background using detail only so far as it was considered necessary to illustrate some fundamental rule or principle."

The book is divided into seven chapters: "The Sources of Law", "Administration of the Law", "Personal Relations", "Property", "Contracts", "Torts" and "Criminal Law". Whilst the scope is encyclopædic, the achievement of Mr. Baalman has been to give the general reader a perspective that is admirable. It is never easy to write on technical matters in a way that is comprehensible to laymen without over-simplifying the subject. Only a sense of proportion and clarity of expression can make it possible, and this book succeeds because its author possesses those gifts.

The style employed, while generally most concise, rarely degenerates into dulness. Now and again there are flashes of wit, humour and what the *Australian Law Journal* described as "sarcastic whimsy". The library of every intelligent man should contain "Outline of Law in Australia".

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[1] "The Occasion Fleeting", by Hugh Barber; 1947. London: H. K. Lewis and Company, Limited. 8½" × 5½", pp. 208. Price: 15s.

[2] "The 1947 Year Book of Orthopedics and Traumatic Surgery", edited by Edward L. Compere, M.D., F.A.C.S.; 1948. Chicago: The Year Book Publishers Incorporated. 7" × 4¾", pp. 438, with many illustrations. Price: $3.75.

[1] "Outline of Law in Australia", by John Baalman; 1947. Sydney, Melbourne and Brisbane: The Law Book Company of Australasia Proprietary, Limited. 7" × 4¾", pp. 368.

The Medical Journal of Australia

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AN ENGLISH INQUIRY INTO THE HEALTH OF OLD PEOPLE.

FROM time to time in these pages mention has been made of the increasing problem associated with the care of the old people in the community. It has been stated that, by prolonging the lives of men and women, medicine has been responsible for the existence of vast numbers of old people, but that medicine has not found out what to do with them. In September, 1946, we quoted A. S. Parkes who stated that men over 65 years of age and women over 60 formed 6% of the population of England and Wales in 1901 and 12% in 1941; he stated that in 1971 the percentage of these age groups would be 21. Parkes held that in 1946 there would be in the national insurance scheme 15 pensioners for every 100 contributors, but that in 1970 the number of pensioners would be 32 for each 100 contributors. The state of affairs in the Commonwealth of Australia will not be very different from that prevailing in the United Kingdom. In our discussion on September 28, 1946, old people were divided into two groups—those who retain most of their faculties and are able to enjoy a moderate amount of mental or bodily activity or both, and a group of more helpless persons who lead what is really a vegetative existence. Another division would be into those who live in their own homes and those who live at hospitals and other institutions. Whatever division is made for purposes of discussion, the fact remains that the lives of old people can be made easier than they are and that they can be helped to help themselves. If this is to be done, some information must be available about their general health, their mental outlook and their environment. Old people do get along somehow and we may well ask what they do when misfortune, or illness, or deprivation of creature comforts befalls them. Medical practitioners are in a better position than most people to answer this question, but reliable information is lacking. The Nuffield Foundation in Great Britain has done useful work in this field. Its Survey Committee on the Problems of Ageing and the Care of Old People, under the chairmanship of H. Seebohm Rowntree, carried out inquiries into the living conditions of random samples of old people in some typical urban and rural areas. Its report was entitled: "Old People". One of the towns covered by the Rowntree Committee's social survey was Wolverhampton. Dr. J. H. Sheldon has carried out a medical survey of the same sample of old people with a view to discovering more about the medical and mental states of old people living at home, and about the stresses and strains to which both they and younger people caring for them may be subject. The findings have been published in a special report.[1]

The persons investigated were chosen by the selection of every thirtieth card from the Wolverhampton register of ration cards. If the date of birth in the case of a man was 1879 or earlier, or 1884 or earlier in the case of a woman, the name and address were taken for inclusion in the sample. In this way 583 names and addresses were collected; 186 of the persons were men of 65 years of age and over, and 397 were women of 60 years and more. The total of those whose investigation was completed was 477. Some idea of the magnitude of this medical survey may be gathered from the fact that it took no less than twenty-one months to complete and that the greatest number of visits that could be made by an investigator in one day was five. Sheldon states that one of the deepest impressions left on his mind after conducting the survey is the fundamental importance of the random sample. Such a sample brings to light those individuals who are ill and know they are ill, but have no intention of doing anything about it, as well as those who never have been ill and probably never will be till their final illness. Less than one third of the sample, 29%, were receiving medical attention at the time of the survey; 44·2% had required attention in the previous three years, but were not needing it when visited; the remainder had not only gone for more than three years without seeking medical aid, but in many cases had virtually never required it. Of 143 men, 84 were married, 48 were widowed and 11 were single. Of 334 women, 127 were married, 165 were widowed and 42 were single. The general level of nutrition was "surprisingly good". Only 3% of the sample were described as undernourished and the undernourishment in most cases appeared to be due to difficulties of shopping. Body build should be noted—men tended to remain normal as they grew old and women showed variation in the direction of either leanness or stoutness. Sheldon remarks that obesity is no bar to long life for 25% of the women over 85 were undeniably stout. The physical state of 24·5% of the subjects was classed as normal-*plus*; 46·2% of the subjects were classed as normal and 29·2% as subnormal. Those in the subnormal group were remarkable for "the indomitable persistence with which they attempted to carry on in spite of sometimes severe or painful defects of health". It was found that men as they grew older tended to be either of very good or of very poor physical health; a larger proportion of women, however, tended to be subnormal, but "with their more tenacious hold on life" women were nevertheless able to outdistance men in sheer survival. In regard to general well-being and survival it is clear that many factors must be considered. Not the least is the question of occupation. At the end of this report, having recorded his facts, Sheldon has a chapter on random reflections in which he sets out some of his

[1] "The Social Medicine of Old Age: Report of an Inquiry at Wolverhampton", by J. H. Sheldon, M.D., F.R.C.P.; 1948. London: Oxford University Press. 8¼" x 5½", pp. 250. Price: 5s. net (Sterling).

impressions and opinions. Here he refers to the well-known fact that many men who reach the retiring age of sixty are not fitted for the sudden change and die for no particular reason in the next few years. Occupation is indeed, as Sheldon describes it, the best medicine. The women show up in this survey to great advantage. Half of them did the housework alone up to the age of 75 and even when over 80 they were able to undertake a substantial part of the household duties. It is interesting that no less than 35·4% of the men took an active share in the housework. (In these post-war days of course domestic activity among men is not confined to those over the age of 65 years.) Summing up woman's work, Sheldon states that, taking everything together, there is no doubt that, up to the age of 75 at least, women give the community more than they take in the matter of domestic responsibility. Stress is laid on the importance of the family and on the fact that, though many old people are ostensibly living alone, they are in close and regular contact with their children. There were 192 subjects whose happiness and domestic efficiency were dependent on the accessibility of their children or other relatives.

Of the illnesses affecting the health of the subject the two most frequent were rheumatism and the effects of a fall or accident. Rheumatic symptoms of one kind or another affected over half the subjects (55·4%) and these varied in severity from twinges of muscular pain to crippling incapacity from affection of the joints. Women were slightly more often affected than men; this was particularly hard on the women in their domestic duties and special reference is made to the burden borne by some of the women who had arthritis of the knee joints. Males had a liability to gout nearly ten times that of the female. In extreme old age one of the most crippling conditions is due to senile changes of the spine. Bronchitis was present in 40% of individuals and affected men oftener than women, the most frequent form being a winter cough. Pain in the feet was found to be an important cause of disability; it affected 40% of subjects and two women to one man. Since the disability is no bar to good physical health, the resulting inactivity is all the harder to bear. Sheldon observes that the provision of chiropodial assistance would be a big boon to a large proportion of the old age population. Frequency and urgency of micturition affected some 30% of the subjects. Defects of vision were found to be of extreme importance. Inquiry into the provision of spectacles revealed a distressing state of affairs. One third of the sample had unsuitable glasses. One reason was the economic factor, another cause was inertia, but the most important was ignorance of the "individual nature" of spectacles—no less than 10% obtained their glasses in a haphazard way. Little more than 6% had unimpaired vision; 1% were blind and at least 12% had eye diseases. Defects of hearing were found to increase at a rapid rate with advancing years; less than 20% of persons under the age of 70 were affected and after the age of 80 years those affected included nearly two-thirds of men and more than two-thirds of women.

Sheldon's view of the old people covered by the inquiry is that they were remarkably vigorous mentally; he thinks that 80% were normal in mind. His impression is that mental impairment was mainly due to environmental factors such as loneliness, bereavement, anxiety about health and economic hardships. Many of these old folk were dependent on the ministration of relatives and the plight of some of these drudges, for they are often little more, really needs a long discussion. One daughter had had no relief from daily toil for twenty years; another had been to the cinema eight times in fifteen years. In 43 instances the younger relatives had had no holidays for five years or more. In summary we may conclude that old people not living in hospitals and other institutions present a problem that must be met in both the preventive and what we may call the therapeutic fields. In the matter of prevention anything that is effected must be the result of a long-range policy. There are many things that can be done for these people in the remedial sphere and without much trouble—for example, in the provision of suitable spectacles. The hardship of attendant relatives should be amenable to cooperative effort. If this English report does nothing else, it shows the way in which the problems of old age should be investigated from the point of view of social biology.

Current Comment.

VACCINATION AGAINST SMALLPOX.

APART from the purely fortuitous fact that a large number of men and women have been vaccinated because there was a war recently, the great majority of the younger half of our population are quite unprotected against smallpox. It is unlikely also that a great degree of immunity still exists amongst those vaccinated during or prior to the mass vaccination of 1913. For several reasons it is probably not justified to be excessively concerned at these facts, though the outbreak of smallpox in North America in 1946 (referred to in these columns on October 11, 1947) provides food for thought. However, even if the possibility of an outbreak in this country is regarded as small (though not negligible), it is regrettable that routine vaccination has been so much neglected. In a recent memorandum on the subject prepared by the British Ministry of Health[1] it is pointed out that the safest and best time for routine vaccination is before the age of six months—preferably (in a thriving infant) at the age of four months. This not only provides an immunity to smallpox at least until school age, but also ensures that any subsequent vaccination, performed as an emergency measure or in relation to service in the armed forces or for overseas travel, will be less likely to cause a severe local reaction resulting in temporary disability or to be followed by encephalomyelitis which is a rare but serious complication. Indeed, the memorandum recommends that, except for the particular reasons mentioned in the preceding sentence, primary vaccination of school children, adolescents and adults should not be undertaken. It is to be encouraged for infants, though not too early in life, especially if the infant is premature; the main contraindications are obvious constitutional disturbances, septic skin conditions, eczema and exposure to infectious diseases such as whooping-cough.

The technique of vaccination recommended is the "multiple pressure" method familiar to those who carried out vaccination of Australian service personnel during the recent war. The arm is considered to be the only satisfactory situation, use of other sites, such as the leg, for æsthetic purposes being discouraged; "the lower part of the posterior border of the deltoid muscle is a situation in which scarring is relatively unnoticeable". A highly volatile agent such as acetone or ether is best for skin preparation, but surgical spirit (if allowed time to dry)

[1] "Ministry of Health Memorandum on Vaccination Against Smallpox"; 1948. London: His Majesty's Stationery Office. Pp. 8. Price: 2d.

and soap and water are satisfactory; non-volatile antiseptics should not be used. For infants one small area of insertion is recommended, and a single insertion is thought sufficient for most patients, but in an unvaccinated older person exposed or likely to be exposed to smallpox infection two separate areas at least an inch apart are desirable to ensure a successful "take" without risk of delay. The detailed technique is as follows.

A drop of vaccine lymph covering an area about one-eighth of an inch in diameter is placed on the skin at the prepared site. . . . A straight needle which should be flat-sided or triangular in section and of relatively large size, in good condition, sharp and sterile, is held parallel or tangential to the arm with the forefinger and middle finger above and the thumb below. One side of the needle point is then pressed firmly and rapidly into the drop about thirty times within ten seconds, the needle being lifted clear of the skin each time. This rapid up and down motion of the needle is in a plane perpendicular to the skin.

The needle is not driven into the skin and no bleeding should occur, but the method will allow the virus-bearing lymph to be carried into the deeper epidermal layers. Excess lymph is gently wiped off and the remainder allowed to dry. Dressings are unnecessary, but at the stage of maximum reaction a piece of sterile gauze may be attached to the inner surface of the sleeve. Subsequent inspection for local reaction must be made, seven days later often being a convenient time.

For children primarily vaccinated in infancy revaccination is recommended when they enter and leave school; for doctors, nurses, sanitary inspectors and others likely to have to deal with cases of smallpox yearly revaccination is considered necessary. Subsequent inspection is made on the third and sixth or seventh days (or more frequently if practicable). Absence of reaction on the third day or later is an indication for repeating the procedure and checking the lymph storage conditions. A local reaction maximal on the second or third day and accompanied by elevation and itchiness but without a vesicle is not to be regarded as a reaction of immunity. Maximal local reaction with vesicle formation three to seven days after insertion is an "accelerated" or "vaccinoid" reaction and signifies the retention of only a partial degree of immunity from previous vaccination. Maximal local reaction after the seventh day with considerable vesicle formation is regarded as "typical (primary) vaccinia" and indicates practically complete loss of previous immunity.

This memorandum was prepared in consultation with medical representatives of all the British and United States forces as well as a comprehensive group of civilian authorities and may quite reasonably be accepted as an authoritative modern statement. For this reason we have reproduced much of its detail.

CANCER IN CHILDREN.

WITH the object of aiding the early diagnosis of cancer and thereby gaining more effective results in treatment, the American Medical Association in cooperation with the American Cancer Society has been publishing a series of articles on cancer. The ninth of the series warrants careful attention, as in it Harold W. Dargeon discusses at some length an aspect of the subject which perhaps receives too little notice, namely, cancer in children from birth to fourteen years of age.[1] He states that in the last decade in the United States cancer, leuchæmia and other tumours have exceeded almost all common diseases among the causes of death in certain age groups during childhood, this high mortality ratio probably being mainly due to the decline in deaths from other diseases and also to improvement in diagnosis of cancer. Comparative Australian figures are not readily available, but it is worth noting that 49 Australian children under the age of fifteen years died from cancer in 1921, 48 in 1931, 46 in 1941 and 52 in 1944.

[1] *The Journal of the American Medical Association*, February 14, 1948.

Dargeon points out that many types of cancer occurring amongst children are curable, and recent results do not justify a constantly hopeless attitude, despite the fact that the prognosis is unfavourable for certain types of tumours, such as medulloblastomata and lymphomata. He considers that a particularly important age group in which reduction in the death rate might be realized is that from birth to five years of age. Not only do the largest number of deaths, by five-year age groups in children, occur in this age period, but also a large number of the curable types of cancer. Increased vigilance in regard to this group should bring many children under observation in time to effect a cure. It is necessary, of course, to appreciate the peculiar features of cancer in children if it is to be recognized. The common adult forms are mostly curiosities if they occur at all in children and the usual juvenile types are rare in adults. The six sites most commonly affected in children are the bones, the kidneys, the eye and orbit, the lymphatic and blood-forming organs, the soft somatic tissues (fat, nerve and muscle) and the nervous system. Dargeon discusses each of these groups in turn, summarizing modern views on clinical features, diagnosis, treatment and prognosis. He has made a comprehensive survey and presented his material in a concentrated form that makes any further summarizing here impracticable. It should be read by all those interested.

The concluding part of Dargeon's paper is concerned with proposals for control of cancer in childhood. This has been taken up seriously in the United States, the first step being a coordination of the study of the subject on a nation-wide basis by a Children's Tumor Registry established by the American Academy of Pediatrics. Five prophylactic measures are outlined by Dargeon: periodic health examinations, excision or biopsy of swellings as indicated, excision of potentially cancerous growths, systematic clinical investigations, and a revision of the attitude towards benign tumours. He advocates health examinations monthly from birth to the age of one year, quarterly from one to six years and every six months thereafter, these examinations to include X-ray examination of the chest and a complete blood count; this seems rather Utopian, but at least it sets a standard. Excision or biopsy is recommended for any suggestive swelling which is of traumatic origin but unusual in nature, especially in duration, or of non-traumatic origin, except enlargements of organs, such as the breasts and testes, associated with the growth of the child, and gynecomastia. Potentially cancerous growths such as melanoma, teratoma, dermoid and neuroma should, in Dargeon's opinion, be excised as soon as possible. Particularly careful investigation is recommended in the presence of an atypical symptom complex or for an unusual child patient, especially the precocious or retarded child, if the departure from the child's norm has been increasingly apparent or if the child has periodic vague illnesses with phases of normal health between attacks; the presence of a neoplasm of the nervous system should not be overlooked in association with behaviour problems. Finally, Dargeon stresses the misleading nature of the term "benign" as applied to tumours, as despite a histologically benign appearance many tumours cause death by other features of their nature or position.

Perhaps there is no more important point in Dargeon's discussion than the importance he assigns to the family physician in the early diagnosis and management of juvenile cancer. Much has been said and written regarding the delay of patients first in seeking and then in following medical advice as a factor in the maintenance of high mortality rates from cancer. But this is surely much more a problem of adults than of children. The average parent seeks and carries out medical advice for his child much more readily and faithfully than for himself; and even though early minor symptoms may be overlooked (unless the ambitious programme for frequent examinations is carried out), probably a much greater share of the responsibility for early and effective treatment rests on the family physician in relation to cancer of children than when the more self-dependent adult is the victim.

Abstracts from Medical Literature.

OPHTHALMOLOGY.

The Significance of Base Pressure in Primary Glaucoma.

ALGERNON B. REESE (*American Journal of Ophthalmology*, January, 1948) refers to "peak pressure" as the height to which the pressure rises in glaucomatous eyes and to "base pressure" as the depth to which the pressure descends. A sustained elevation of base pressure indicates permanent damage to the filtration angle. The difference between the two pressures represents the transitory, functional factor in the glaucomatous state. The more advanced the glaucoma, the more nearly the base pressure approaches the peak pressure. If, in shallow angle glaucoma which is caused by some transitory dynamic factor which pushes the root of the iris forward blocking the angle, this blocking occurs often enough over sufficiently protracted periods, peripheral synechiæ form and the pressure is constantly elevated. The base pressure is constantly above normal. Deep angle glaucoma is thought to be due to trabecular obstruction. The changes leading to the glaucoma are believed to be organic with no functional element, and in it there is a more or less steady rise in pressure. The pressure at any given time tends to represent the permanent organic damage to the angle. In operating for chronic primary glaucoma the author is guided thus: In a shallow angle glaucoma (*a*) with low or normal base pressure, iridencleisis is performed; (*b*) with rising base pressure to high normal or to 30 millimetres of mercury, iridencleisis with sclerectomy or the La Grange operation is performed; (*c*) with a base pressure over 30 millimetres of mercury a trephine is performed. In deep angle glaucoma (*a*) with a base pressure of 30 to 35 millimetres of mercury iridencleisis or cyclodialysis is performed; (*b*) with a base pressure of 35 to 40 millimetres of mercury iridencleisis with sclerectomy or cyclodialysis is performed; (*c*) with a base pressure of over 40 millimetres of mercury a trephine is performed.

"Rutin" Therapy for Increased Capillary Fragility and Retinopathy Associated with Diabetes Mellitus.

LEON M. LEVITT *et alii* (*The American Journal of the Medical Sciences*, February, 1948) have carried out observations on "Rutin" therapy in the presence of increased capillary fragility associated with *diabetes mellitus*. They point out that "Rutin" has recently been introduced for the treatment of hæmorrhagic states manifested by increased capillary fragility. It is a flavonal glucoside isolated from the early blossoming leaves of the buckwheat plant. The authors refer to accounts in the literature of the beneficial effects of "Rutin" in the restoration to normal of capillary fragility; in one instance benefit was conferred on as many as 75% of patients. Other authors have not been so successful. A close association has been reported between the increased skin capillary fragility found by various tests in *diabetes mellitus* and diabetic retinopathy. The authors have tried to determine the effects of "Rutin" on the capillary fragility and retinopathy of diabetic patients and to ascertain whether any improvement in one was accompanied by changes in the other. Twelve patients suffering from diabetes, with diabetic retinal hæmorrhages and with increased capillary fragility were studied. Throughout the period of study no changes were made in the diabetic regimen of any patient, so that any improvement which occurred could not be regarded as due to better diabetic management. "Rutin" was administered for a period of three months. A lessening of skin capillary fragility occurred in only three of the twelve patients and slight improvement in one. Two of these four patients had hypertension and their blood pressure dropped to normal while they were under observation; the other two had normal blood pressures. Punctate hæmorrhages of the type associated with diabetes were found in 23 fundi of the 12 patients at the onset of the study. After "rutin" therapy for three months an improvement occurred in five fundi of four patients; in two of the five the retinal hæmorrhages disappeared completely. The authors conclude that the improvement observed could not be directly attributed to "Rutin". They refer to one patient whose diabetic retinitis progressed rapidly under treatment. In two patients the retinal lesions improved without the occurrence of any change in the increased skin capillary fragility; in a similar number skin capillary resistance increased without retinal improvement.

The Significance of the Intracutaneous Test for Hypersensitivity to Uveal Pigment.

SAMUEL D. MCPHERSON AND ALAN C. WOODS (*American Journal of Ophthalmology*, January, 1948) summarize their experiences with the intracutaneous test for hypersensitivity to uveal pigment, discuss its occurrence in various ocular conditions and attempt to determine its diagnostic and prognostic value. The preparation of the pigment and the technique of the test are described. The results of the test are reported on microscopic reading and the result is "positive", "doubtful positive", "negative", "non-specific" or "infected". A positive result shows all pigment to have been phagocytosed by epithelioid and giant cells. The area is infiltrated with lymphocytes, epithelioid cells and giant cells. In a doubtful positive result some pigment is phagocytosed, the remainder being inertly distributed throughout the dermis. The cellular reaction of lymphocytes, epithelioid and giant cells is less intense than in positive reactions. In a negative result all the pigment lies inertly distributed in the dermis, usually in large clumps. There is no phagocytosis and no cellular reaction is present. The non-specific result is characterized by pigment lying inertly in the dermis. There is a moderate cellular reaction chiefly of lymphocytes and wandering mononuclear cells. When the pigment is largely unphagocytosed and the entire section is crowded with polymorphonuclear leucocytes, which occasionally phagocytose some pigment, the result is said to indicate an infection. In thirty cases of sympathetic ophthalmitis, twenty-two of which were proven histologically, there was a positive result in eighteen and in seven cases the result was doubtful or weakly positive. It was also found that the result of the test becomes positive by the fourth month after the onset of symptoms and in the majority of cases becomes positive within the first month. Of the five tests which gave negative results four were made at the third month and the result might have become positive if the tests had been repeated; in the fifth case the test was carried out eighteen months after onset of disease when the sensitivity may have faded. It seems a reasonable deduction that hypersensitivity to uveal pigment is a fairly regular concomitant of sympathetic ophthalmia. The finding of a strongly positive result to the pigment test after an injury or operation involving the uveal tract is a warning of a stormy post-operative course, but it is not an indication that sympathetic ophthalmia will develop. Doubtful positive and negative results to tests have no prognostic significance. In 37 cases of uveitis from constitutional causes no test gave a positive result, and in five cases of the Vogt-Koyanagi syndrome the result of the test was positive in three of the cases. The mechanism of the test is discussed and its relation to the ætiology of sympathetic ophthalmia is mentioned. The authors conclude that the diagnostic and prognostic significance of the test is limited. Positive results are causes for alarm and increased vigilance. Doubtful and negative results indicate in general a better prognosis. However, the margin of error with both positive and negative results is so great that their interpretation should be made only in the consideration of the clinical course.

A Simple Ptosis Operation.

J. S. FRIEDENWALD AND J. S. GUYTON (*American Journal of Ophthalmology*, April, 1948) describe a new operation for ptosis. Two small incisions are made at the upper border of the brow, one five millimetres from its nasal end and the other three centimetres lateral to the first. Each goes down to the periosteum. Two small incisions are made through the skin two millimetres above the upper lid margin and about two centimetres apart, placed so that they lie about seven millimetres from the nasal and lateral canthi respectively. A braided white silk suture (size 00 to number 2) on a number 5 three-eighths curve surgical cutting needle is inserted through the upper nasal incision, through the fascia of the frontalis above the brow and out through the upper lateral incision. From here the suture is carried down through the lid along under surface of the orbicularis to emerge through the lower lateral incision; then through the dermis two millimetres above the lid margin to emerge through the lower nasal incision; then along the under surface of the orbicularis to emerge through the upper nasal incision. The knot is tied in the depths of the upper nasal incision. The suture is pulled tight enough to elevate the upper lid two millimetres above the desired final position. The operation is best performed under general anæsthesia. It is most important that the suture be placed at the proper depth adjacent to the lid margin. It must not be placed between the loose connective

tissue between the skin and tarsus, because it will gradually slip up in this loose tissue with resulting under-correction of the ptosis. The authors regard this as the best operation for ptosis in cases in which there is paralysis of the levator and palsy of the superior rectus. They state also that the permanency of the result is yet to be proved, but that if there is recurrence of the ptosis the operation can be repeated or a different operation performed.

OTO-RHINO-LARYNGOLOGY.

"Permanent" Deafness due to Gunfire.

G. REID (*The Journal of Laryngology and Otology*, February, 1948) has continued his investigations into loss of hearing resulting from gunfire. He made audiometric examinations of 116 artillerymen without present evidence or past history of ruptured drums or middle ear involvement. Of these men, (*a*) 50% had peak losses greater than 30 decibels in the more severely affected ear, (*b*) 42% had peak losses greater than 40 decibels, (*c*) 23% had peak losses greater than 50 decibels, (*d*) 20% had average hearing losses over the range 512 to 8192 greater than 20 decibels in the more severely affected ear, and (*e*) 8% had average losses greater than 30 decibels. The subjects of the investigation were not examined within ten days of a previous exposure, and those who showed middle ear involvement were excluded. Inquiry was made about the length of service, and the nature, duration and frequency of exposure to gun blast,, and also about the occurrence of previous acoustic trauma from any other cause. The mean average hearing loss of the group was 10·20 decibels; the corresponding figure for a group of 103 medical students was 0·52 decibel. This difference is considered highly significant. In general, deafness was most pronounced in subjects serving in proof ranges. Most of the damage is believed to have occurred in the first one or two years' service. Among the various types of audiogram met with was found every gradation between the "abrupt" and the "gradual" type of high-tone loss. There was no evidence that "abrupt" loss characterized deafness following a single severe detonation. The author emphasizes the importance of protecting the hearing of artillery personnel, not only against the development of temporary deafness, but against permanent aural damage, which can occur without rupture of the drum.

Melkersson's Syndrome.

KARSTEN KETTEL (*Archives of Otolaryngology*, September, 1947) states that Melkersson's syndrome comprises peripheral facial palsy which may show a tendency to relapse, angioneurotic facial œdema and a distinctly furrowed tongue which may become further swollen coincidental with the facial swellings. He reports five cases and gives a *résumé* of the literature. Most frequently the disease begins in childhood or youth, with peripheral facial palsy. The swelling of the face may occur simultaneously with the facial palsy, but in many cases a long time, up to many years, will pass before this symptom appears. The swelling may be localized to the eyelids, the nose, the chin, and especially the lips. The skin appears natural and does not pit on pressure. There is no pulsation nor glandular enlargement. The *lingua plicata* has often been present since childhood and is not regarded merely as a swelling coordinate with that of the lip. The facial palsy is always of peripheral type; it may be bilateral and it may relapse. In nature it cannot be distinguished from Bell's palsy. Little is known from the point of view of pathological anatomy about the swelling of the face. There is a more or less pronounced œdema, especially of the subcutis and muscles with chronic inflammatory infiltration, and slight dilatation of blood vessels. The lymphatic vessels are either not dilated at all or only slightly dilated. Only very occasionally is a greatly dilated lymph vessel to be found. Nothing is known about the pathological anatomy of the tongue. The primary feature of the palsy probably is a disturbance of circulation, a disorder of the *vasa nervorum*. The swelling of the face must also be regarded as angioneurotic œdema. It may be presumed that the vasomotor fibres of the face follow a course in or along the facial nerve. Nothing is known of the ætiological factors. New and Kirch recommend the injection of boiling water into the swollen tissue, followed by excision of that part of the subcutaneous tissue. If the preliminary treatment is not carried out, recurrence is more likely, although the author performed excision alone in one case and there was no recurrence, and in another, further acute œdema occurred despite the preceding injection. For the facial palsy, if there are no signs of beginning mobility after two months, or if the palsy is relapsing, decompression of the nerve should be carried out in accordance with the Ballance-Duel method.

Bell's Palsy.

KARSTEN KETTEL (*Archives of Otolaryngology*, October, 1947) reports observations on fifty patients who were operated on in the manner of Ballance and Duel. Pathological changes were found partly in the bony system and partly in the nerve itself. In eleven instances necrotic changes were observed in the mastoid cells, involving the entire cellular system in five cases, but only around the stylo-mastoid foramen in six. There was no sign of round-cell infiltration or granulation tissue. In eighteen cases the facial canal itself was soft, with slight to marked decay of the osseous tissue proper and cicatricial thickening of the covering membranes. In 28 of the 50 cases the nerve was highly œdematous and bulged when the sheath was slit open; this was particularly so in recent or in relapsing conditions. Observations seem to indicate that the disease is a disorder of the *vasa nervorum*. It is thought that the ischæmic nerve becomes paralysed and secondarily becomes œdematous and is then compressed in the rigid bony canal, a vicious circle being created. The finding of bony necrosis without round-cell infiltration is further evidence to suggest a vascular lesion. Accompanying symptoms such as pain, slight congestion of the drum and acousticovestibular reactions may all be explained as simultaneous collateral reactions to a disturbance of circulation. What releases the mechanism of the *vasa nervorum* is not known. Whereas a positive faradic reaction in the facial muscles may indicate, but does not guarantee, a complete spontaneous recovery, a negative faradic response does not entirely preclude the possibility of recovery, as used to be taught. Two months is regarded as the time limit for conservative therapy; after that decompression is indicated. A decompression is indicated also if the spontaneously recovered partial mobility has ceased before complete restitution has been obtained. Decompression is indicated in relapsing paresis. It is considered that the beneficial results from decompression are due to improvement of circulation by release of pressure on the *vasa nervorum*, or perhaps result from the establishment of a collateral circulation.

Bone Conduction after the Fenestration Operation.

R. R. WOODS (*The Journal of Laryngology and Otology*, January, 1948) states that the only means at present at our disposal for estimating the degree of nerve deafness and thus for determining the reserve of cochlear function is measurement of the response to bone conduction. Routine audiometer tests carried out in all cases of deafness for the past twelve years shows that in otosclerosis bone conduction is seldom normal in the upper frequencies, except in very early cases. The impression is of a disease which produces a middle ear type of deafness in the low tones and a mixed deafness in the upper tones. The earliest air conduction defect is of the low tones, while the earliest bone conduction defect is of the high tones. Since the introduction of the fenestration operation the patients have been tested before and after operation, and it has been found that, whenever the hearing undergoes considerable improvement as a result of operation, hearing by bone conduction is improved as well as hearing by air conduction. There has been no significant change in masked bone conduction in any of the unoperated ears. In one case in which air conduction hearing later relapsed to the pre-operation level owing to closure of the fenestra, the bone conduction also receded to its former level. Apparently part at least of the loss of bone conduction in otosclerosis is due to a change which is reversible and cannot therefore be due to degeneration of the cells of the organ of Corti. Fixation of the stapes not only may prevent vibrations from reaching the labyrinth, but may also impede the response of the end organ by limiting the mobility of the perilymph. The creation of a fenestra in addition to short circuiting the middle ear block would also allow the perilymph to vibrate more readily and stimulate the organ of Corti, thus alleviating both air conduction loss and bone conduction loss. Although bone conduction may be an indicator of the stimulability of the cochlea under the condition of stapes fixation, its value as an indicator of potential maximum cochlear function is doubtful. Response to bone conduction may not be solely dependent on conditions within the labyrinth, for bone-conducted sound may be partly transmitted through the ossicular chain and oval window to the labyrinth.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Pædiatric Section of the New South Wales Branch of the British Medical Association was held on November 13, 1947, at the Stawell Hall, 145, Macquarie Street, Sydney.

Progress in Pædiatrics.

DR. LORIMER DODS read a paper entitled "Progress in Pædiatrics" (see page 781).

DR. EDGAR STEPHEN thanked Dr. Dods for his talk. He said that Dr. Dods had presented a paper which was almost like a revolution, as so much of it was completely new to his audience. Dr. Stephen said that he had had no experience of most of the methods of treatment Dr. Dods had described. He considered that those present were greatly indebted to Dr. Dods for making them acquainted with the advances he had encountered in America and also for his admirable presentation of the various subjects.

DR. LINDSAY DEY supported Dr. Stephen's remarks, and said that he would like to see all the data they had heard that night in print, so that the information could be more thoroughly studied.

DR. T. Y. NELSON referred to the use of streptomycin in meningitis, and asked whether more cases of hydrocephalus were being discovered after modern treatment; he also asked whether there was any hazard connected with streptomycin in that way. Dr. Nelson further questioned the bulk of the dose of streptomycin given by intrathecal injection. In some cases this appeared to be as great as ten millilitres. He regarded this bulk as a hazard unless there was a great increase in the volume of cerebro-spinal fluid.

DR. D. HAMILTON asked whether the baby aged under six months should be protected against pertussis by vaccine given to the child early or to the mother late in pregnancy.

DR. CLIFTON WALKER sought information on the rationale of giving vitamins *A* and *D* to healthy breast-fed babies. He wondered why particularly vitamins *A* and *D* were chosen.

DR. ROBERTSON asked what was the maximum dose of "Tridione" for children.

DR. C. WARBURTON asked whether something could be reported of the toxic effects of "Tridione".

DR. BERYL COOLEY asked for information of work in America on encephalography and on "problem children".

Dr. Dods thanked Dr. Stephen and Dr. Dey for their appreciation of his paper. In reply to Dr. Nelson, Dr. Dods said that it was too early in the history of streptomycin therapy to make any statements about the incidence of hydrocephalus following meningitis treated by this means; the cerebro-spinal fluid protein level and cell count were temporarily raised after intrathecal administration of streptomycin, but there was no reason to assume that this indicated an increased risk of a cerebro-spinal fluid "block". With regard to the bulk of the dose for intrathecal injection, the dilution recommended was 5000 streptomycin units in one millilitre of normal saline solution, which meant an intrathecal injection of ten millilitres if 50,000 streptomycin units were to be given. If necessary, greater concentrations could be used; but with the present preparations of streptomycin, it was not advisable to exceed 10,000 streptomycin units per millilitre.

In reply to Dr. Hamilton, Dr. Dods said that there was some evidence that the newborn infant could be immunized against pertussis by the administration of pertussis vaccine to the mother during the latter months of her pregnancy; although the protection afforded by this method of immunization had not been established, it had been shown that the serum of the newborn infants of such mothers contained a significant titre of pertussis agglutinins. Many American pædiatricians were attempting to immunize infants against pertussis by the administration of pertussis vaccine at three months of age, but it was doubtful whether immunization could be achieved any earlier than that.

In replying to Dr. Clifton Walker's question, Dr. Dods pointed out that, although he had quoted the opinion of many American pædiatricians that extra vitamin *D* should be given to the normal breast-fed or artificially fed infant after the third week of life, he felt that this supplement of vitamin *D* was probably not necessary for the healthy breast-fed Australian infant, who enjoyed with his mother many months of sunshine.

Replying to Dr. Robertson, Dr. Dods said that the average initial dose of "Tridione" for an infant aged less than four years was about 0·3 to 0·6 gramme per day; if there was no response after one month of such treatment, this daily dose might be increased by 0·3 to 0·6 or 0·9 gramme daily. If no obvious response occurred after three months of such treatment, the "Tridione" should be suspended. The maximum daily dose for an infant of this age was probably about 0·9 gramme. The toxic effects of "Tridione" included irritability, skin rashes, photophobia and granulopenia.

In reply to Dr. Beryl Cooley's question, Dr. Dods said that the electroencephalograms of so-called "problem children" occasionally showed the classical "dart-dome" dysrhythmias of the *petit mal* triad, and that some of these children had responded dramatically to "Tridione" or "Didione".

VICTORIAN BRANCH NEWS.

FOOD FOR BRITISH DOCTORS FUND.

AT the invitation of the Council of the Victorian Branch of the British Medical Association, 194 members of the Branch have subscribed £700 to a "Food for British Doctors Fund".

Dr. Charles Hill, Secretary of the British Medical Association, London, was asked to forward the names and addresses of suitable recipients of food parcels, especially those of doctors with young children practising in industrial areas in Great Britain, aged doctors living alone or in a household of not more than two members, doctors receiving assistance from the Royal Medical Benevolent Fund, and doctors' widows.

So far 552 parcels have been sent through the agency of the Victorian Department of Agriculture, each parcel containing a card, "With Best Wishes from the members of the Victorian Branch of the British Medical Association", and appended are extracts from some of the many letters received in the office of the Branch from recipients of the gifts.

It is impossible not to be deeply moved by the appreciation expressed by our colleagues in Great Britain, and it has been decided by the Branch Council to continue the operation of the "Food for British Doctors Fund" indefinitely, and members of the Branch are invited to continue to subscribe to it.

"At a meeting of the medical profession in this division held on March 7, 1948, I was instructed to request that you convey to the Victorian Branch of the Association in Australia the great appreciation and thanks of the profession in this division for the kindness and generosity of the Branch in forwarding food parcels for elderly and infirm practitioners in the division, and to say that the parcels have been safely received and are greatly appreciated by the recipients.

Yours faithfully,

(Signed) A. N. MATHIAS,
Honorary Secretary of Willesden Division."

"It's welcome not only as food in a hungry land, but also as a token of the goodwill which sent it."

"It is lovely to get some tinned stuff without having to count out our precious food points."

"On behalf of my husband and self I think you very, very sincerely and all the kind friends who have subscribed towards such great kindness that enables us to receive another splendid parcel of food and from my heart I say God bless you all."

"Many thanks for the splendid gift parcel received from the B.M.A. of Victoria, Australia. It arrived safely and just before my eighty-sixth birthday."

"Being bedridden (three years) now for a long time, I must say that the parcel is of the greatest value, especially as my wife has to go out to work."

"I am writing on behalf of my husband to thank you very much for your gift which we shall so enjoy. It has arrived on the eve of my birthday, so we shall celebrate. My husband is eighty-one."

"Will you please convey to your committee my grateful thanks for the gift food parcel which reached me safe and sound. I am a retired doctor, aged seventy-one, single and living alone in lodgings. My health is poor."

"It is almost five years now since my husband died, so you can imagine the surprise I got when your parcel arrived yesterday. It is the first time I have ever had a parcel like this, so all the more exciting."

"We have six children here, three boys and three girls, and though it would be an exaggeration to say we were

undernourished, there are many times when we are very short indeed, and we are grateful for any little addition to the rations."

"I live in a very isolated place and shopping of any kind is difficult, and now potatoes are rationed it is worse than ever. When your parcel came we had nothing—so the steak and kidney pudding was sampled at once and it was good."

"As I am myself a permanent invalid and have just had my little boy back from hospital after an acute appendix you will realize just how much I appreciate the kind thought behind this gift."

"I have used two or three tins out of the parcel and found them very good indeed—the beef dripping being such a help. Living alone it is much harder to manage on the rations, so that the parcel was very welcome and very unexpected."

"My very grateful thanks for the wonderful parcel sent to me. Coming as it did just before my son was due home for his holidays—he is a medical student at Guy's Hospital with a very large appetite—it is a veritable godsend."

"You have built, indeed, better than you knew. I am a retired pathologist whose laboratory was closed down when the war began, and am now an old man with cardiac trouble and living alone in a garret, and I can assure you that your package of luxuries has meant a great deal to me by virtue of the sympathy that prompted the gift. In former days I had a succession of Australian house physicians, and no man was ever better served."

"I am writing for my brother to thank you very much indeed for the delightful parcel you so kindly sent him. He would like to have written to you himself, but unfortunately he is nearly blind and not at all well and has to spend most of his time in bed; added to this he is in his ninetieth year."

"The contents were indeed most welcome. As you will know we do not go short of food, although our rations are restricted to the essentials, but it is very delightful to receive a gift of some extras. My children will be very pleased with the home-made cake my wife will make with the fat. It is perhaps the children who suffer most. They, I am afraid, have grown up knowing nothing of the good things we used to have as children."

"I am a doctor's widow, more or less an invalid, seventy-six, and live all alone, so your parcel is most useful."

"I am sure it would have given you and your fellow members pleasure to see the excitement that the arrival of the parcel caused to my son Alan, aged eleven years."

"I can assure you all that the contents will be a real treat to my son (who is an invalid) and myself. We simply cannot make two ration books go very far."

"As I am an elderly woman doctor (retired) and living alone, it is specially hard to manage on the small rations allocated to one person. So I am extra grateful for the extras. All the same I assure you that some of my poorer neighbours will also share in this good fortune. Everyone tries to share out these days."

"It arrived in perfect condition and the most delighted recipient was my son, aged twelve, who immediately confiscated the cheese; I hope it will give him some extra energy."

"Housekeeping in England is not easy now, especially for doctors, who are not able to have their meals in restaurants. As we have five children, you can imagine how much the good things in your parcel will be appreciated."

"My heartfelt thanks to the members of the Victorian Branch of the British Medical Association from an eighty years old colleague."

"My wife and I thank you most warmly for the food and just as much for the thought. I now hope that we only just beat the Australian cricket team next summer."

"The contents will be most acceptable, especially—I think—the beef dripping. Our supply of fats is indeed small."

"Although a practising physician, I am also a housewife with two children and can therefore appreciate fully—perhaps more than your male recipients—the difficulties of our British housewives in procuring a variety in food for their families."

"My son is now in his fifth year studying medicine, and my daughter is at the present time preparing for her second honours English examination which takes place in June. I find it a great relief to be able to give them some good food, thanks to your kindness."

"The food in this country is very monotonous these days, and your parcel will bring welcome variety and change into our rather stereotyped menu. Quite apart from the food this gesture of comradeship is very heartening to your fellow members of the British Medical Association."

"I received yesterday with complete surprise a food parcel from your Branch. I should like to try and express to you and your members my appreciation of your kindness. When our Government tells you that we are not starving it is being, strictly speaking, quite truthful. Nevertheless we are all now in such a state that our reactions to food are very much akin to those of the starving."

"I can assure you that the contents will be of great service to me. It is becoming increasingly difficult for old people—I am seventy-one years of age—living alone to manage on the rations and food available."

"As Doctor is totally blind I am writing this for him to thank you for your great generosity in sending such a wonderful food parcel to him."

Post-Graduate Work.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

COURSE FOR D.G.O. PART II.

THE Melbourne Permanent Post-Graduate Committee announces that the following lecture-demonstrations in obstetrics and gynæcology will be given in the lecture theatre, Women's Hospital, Melbourne, at 2 p.m. on the dates shown.

July 8: "Endocrines", Acting Professor J. W. Johnstone.
July 15: "Puerperal Sepsis", Dr. A. M. Hill.
July 20: "Diseases of Vulva and Vagina", Dr. R. Fowler.
July 27: "Acute Surgical Conditions of Pelvis", Dr. L. Gleadell.
July 29: "Sterility", Acting Professor J. W. Johnstone.
August 3: "Carcinoma of Uterus", Dr. J. M. Buchanan.
August 5: "Tumours of Lower Abdomen", Dr. John Green.
August 10: "Disorders of Uterine Action", Dr. W. M. Lemmon.
August 12: "Pelvic Inflammations", Dr. R. Worcester.
August 17: "Gynæcological Hæmorrhages", Dr. H. Furnell.
August 19: "Anæmia, Thyreoid Disease and Diabetes in Pregnancy", Dr. W. M. Rose.
August 24: "Toxæmias of Pregnancy", Dr. A. M. Hill.
August 26: "Heart and Lung Diseases in Pregnancy", Dr. W. M. Rose.
August 31: "Amenorrhœa and Dysmenorrhœa", Dr. L. Gleadell.
September 2: "Cæsarean Section", Dr. D. F. Lawson.
September 7: "Genital Prolapse", Dr. W. I. Hayes.
September 9: "Manipulative Obstetrics", Dr. John Green.
September 16: "Obstetrical Hæmorrhages", Dr. R. Rome.
September 23: "Post-Operative Complications", Dr. F. Hayden.

Bacteriology lectures by Professor S. Rubbo and pathology lectures by Dr. H. F. Bettinger will be conducted during the same period.

Enrolments.

The total fee for these courses will be 28 guineas. Enrolments should be made with the Secretary of the Post-Graduate Committee, 426, Albert Street, East Melbourne (JM 1547), as soon as possible.

CHANGE OF ADDRESS.

From Friday, June 11, 1948, the address of the Melbourne Permanent Post-Graduate Committee will be 426, Albert Street, East Melbourne, C.2. The offices will be situated at the far end of the library of the Victorian Branch of the British Medical Association. The telephone number will remain the same—JM 1547.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

WEEK-END COURSE AT WOLLONGONG.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that a post-graduate week-end course will be held at the Wollongong District Hospital, Wollongong, on Saturday and Sunday, July 17 and 18, 1948, in conjunction with the Clinical Society of the South-Eastern Medical Association. The programme is as follows:

Saturday, July 17.—2.30 p.m.: "Surgery of the Gall-Bladder", Dr. Howard Bullock. 4 p.m.: "Common Skin Diseases Met in General Practice", Dr. J. Witton Flynn.

Sunday, July 18.—10 p.m.: Part A, "Anticoagulants in Medical Practice", Part B, "Antihistamine Drugs", Dr. F. Hales Wilson. 11.30 a.m.: "Cancer of the Rectum", Dr. Howard Bullock. 2.30 p.m.: "Diseases of the Ear, Nose and Throat in General Practice", Dr. Bernard B. Blomfield. 4 p.m.: Part A, "Some Recent Advances in Treatment", Part B, "Aspects of Heart Disease", Dr. F. Hales Wilson.

The fee for the course will be £2 2s. Those wishing to attend are requested to notify Dr. Rawdon T. Suttor, Honorary Secretary, Clinical Society of the South-Eastern Medical Association, 60, Kembla Street, Wollongong, as soon as possible.

OVERSEAS LECTURER.

The Post-Graduate Committee in Medicine in the University of Sydney writes that lectures by Professor J. C. Spence, M.C., M.D., F.R.C.P., announced in the issue of June 5, 1948, will be delivered at Sydney as follows: Monday, July 12, at 8.30 p.m., "Diseases of the Newly Born". Wednesday, July 14, at 4.30 p.m., "Human Beings and Their Young". (A study of the biology of child care.) Friday, July 16, at 8.30 p.m., "Tuberculosis in Childhood". Tuesday, July 20, at 8.30 p.m., "Osteomyelitis in Childhood". Thursday, July 22, at 8.30 p.m., "The Treatment of Dehydration in Infants". All these lectures will be held in the Stawell Hall, 145, Macquarie Street, Sydney. A fee of £2 2s. will be charged for attendance, except to members of the annual general course, to whom a fee of £1 1s. will be charged. Admission will be by ticket only, and application, enclosing fee, should be made as soon as possible to the Secretary, the Post-Graduate Committee in Medicine, 131, Macquarie Street, Sydney. Telephones: BW 7483, B 4606. Telegraphic address: "Postgrad, Sydney."

Correspondence.

SYDNEY EVAN JONES MEMORIAL.

SIR: The outstanding work of the late Dr. S. E. Jones, Medical Superintendent of Broughton Hall Psychiatric Clinic for over a quarter of a century, the skill and humanity of his treatment of the thousands of patients who came under his care, his scientific contributions to psychiatry, his inspiring influence as a teacher of medical students and graduates, and his unceasing efforts towards the better understanding and treatment of nervous and mental invalids are worthy of lasting commemoration.

It has therefore been decided to establish a lecture or prize in his name, under the control of the Australasian Association of Psychiatrists, of which he was one of the founders.

The Medical Secretary of the New South Wales Branch of the British Medical Association has kindly undertaken to receive subscriptions. Cheques should be made payable to "S. E. Jones Memorial Fund" and enclosed in an envelope addressed: S. E. Jones Memorial Fund, c.o. Medical Secretary, B.M.A. House, 135, Macquarie Street, Sydney.

Yours, etc.,

H. F. MAUDSLEY,
President, Australasian Association of Psychiatrists.

G. BRUCE R. WOOSTER,
Chairman, Section of Neurology, Psychiatry and Neurosurgery, New South Wales Branch, British Medical Association.

W. S. DAWSON,
Professor of Psychiatry, University of Sydney.

Sydney,
March 27, 1948.

VOLUNTARY CONTROL OF THE HEART.

SIR: While on the above subject in Current Comment in THE MEDICAL JOURNAL OF AUSTRALIA, May 22, 1948, it may interest readers to hear of a case of voluntary arrest of the heart beat, of which I was a personal witness. On one occasion when we had the Indian repatriated Allied prisoners of war from Singapore in our base hospital in Bangalore, we hired a strolling entertainer of some repute to entertain the "up" patients. He did some clever trick shooting with a bow and arrow, and nearly skewered a patient with an arrow that went through the window. Then half-way through a programme of excellent conjuring he gave his demonstration of voluntary control of his heart beat. He invited two medical officers onto the stage, of whom I was one, and invited each to hold a pulse. The pulse was quite normal. Then, standing erect, this quasi-Yogi gazed into the distance intensely without seeming to do much else—not even holding his breath—and gradually over a period of about two minutes his pulse gradually dwindled and disappeared. He was then quite rigid and fell slowly back into the arms of his assistant, who lowered him gently to the floor. The assistant then rapidly exposed the Yogi's chest for us both to listen to the heart with our stethoscopes. We listened intently for about ten seconds without hearing a heartbeat and were then rather hurriedly waved away by the assistant, who at once applied moderate deep massage below the left costal margin. In about ten seconds the Yogi began to stir and in about thirty seconds was on his feet smiling and taking his bow. The mystified doctors congratulated each other on having saved a life and left the Yogi to his triumph. The Yogi then continued his entertainment for another hour and was none the worse for his experience.

Yours, etc.,

R. L. RAYMOND.

223, Miller Street,
North Sydney,
June 3, 1948.

Public Health.

WEEK-END CONFERENCE AT CANBERRA ON FEEDING PROBLEMS OF THE INFANT AND TODDLER.

IN place of the usual Anne MacKenzie and Charles McKay Orations which are normally held at the Institute of Anatomy, Canberra, each year, it has been decided this year to hold a week-end symposium on Saturday and Sunday, July 17 and 18. Saturday will be devoted to the feeding problems of infancy, and Sunday to the feeding problems of the toddler and young child.

Those participating in the discussions will include Professor J. C. Spence, of Durham, Dr. Kate Campbell, Dr. Margaret Harper, Dr. Kathleen Winning, Dr. V. L. Collins, Dr. L. Dods, Dr. E. B. Sims and Dr. Felix Arden.

Medical practitioners are welcome to attend the conference and to participate in the discussions. The Director of the Institute of Anatomy wishes to hear from any practitioners wishing to attend and will endeavour to assist them in securing accommodation.

CONGENITAL CARDIAC DEFECTS.

THE following letter has been received by Dr. L. P. Winterbotham, of Brisbane, from Rotterdam, Holland.

Dear Sir,

In reference to your article in THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, 1946, page 16, as Secretary of the "Rubella-Team" here in the Netherlands, I should like to give you some information of that work in our country. Professor P. H. G. van Gilse, otologist, is President of the Rubella-Team, founded by the Preventive Medical Institute (Leyden). He noticed the article written by C. H. Albaugh in *The Journal of the American Medical Association* of November 10, 1945; under the impression of the first positive case noted in our country he asked me to inquire among the mothers of the children placed in our five Institutes for Deaf and Dumb Children, and I found among them many positive cases, and I made a statistic list for later publication.

In the meantime we began collecting serum from reconvalescents, and recovered rubella patients whose blood was examined on the fourth or fifth day of the rash for plasma-cells, became "donores". (See the article written by Sven Moeschlin, *Helvatica Med. Acta*, 1940, *Heft* 3, 227.) We have tried to protect every pregnant woman in the first four months of pregnancy if she has been in close contact with a rubella patient; no one was infected or got the illness after the injection of 70 c.c. reconvalescent serum. The results of the injections will be published later.

As a visiting school doctor I was in a position which enabled me to examine a large group of healthy children born in the years 1940-1941, when we also had an epidemic of rubella.

All the children's mothers were also examined and inquiries made if they had in the time of their pregnancy been in contact with these infectious diseases.

After this control the relationship of "rubella early in pregnancy" and congenital defects was absolutely conclusive; see in my later publication. Now having been more than a year investigating, I was struck by this notice in your article: "The Government in Queensland have ordered all children born in 1941 to be examined." I am, of course, very interested and find it very important to hear from you the results of this examination; is it already known? I ask you kindly to send me a report.

Hoping to hear shortly from you, with collegial greetings,

Yours truly,

(Sgd.) ELISABETH KAMERBECK,
Voorschoterdaan Syd., Rotterdam-Dist., Holland.

Professor Dr. P. H. G. Gilse, President,
Academence Niehenhurs,
Leyden, Holland.

The Royal Australasian College of Surgeons.

MEETING OF THE COURT OF EXAMINERS.

THE next meeting of the Court of Examiners for the final examination for Fellowship of the Royal Australasian College of Surgeons will be held at the College in Melbourne during the first week in December, 1948.

Candidates who desire to present themselves at this examination should apply, on the prescribed form, to the Censor-in-Chief for permission to do so on or before October 1, 1948.

The appropriate forms are available from the Secretary of the Royal Australasian College of Surgeons, Spring Street, Melbourne, C.1.

ADMISSION OF EX-SERVICE GRADUATES TO FELLOWSHIP.

THE Council of the Royal Australasian College of Surgeons has decided that ex-service graduates who fulfil the following requirements and desire to obtain the Fellowship of the College may, on application on the prescribed form and with the approval of the Censor-in-Chief, present themselves for a special examination comparable with the type of examination adopted prior to the introduction of the new regulations in December, 1945.

Those eligible to avail themselves of this provision must (*a*) have held an approved higher surgical qualification involving a primary and final examination for a period of not less than five years; (*b*) have been members of an active surgical unit during their service with the armed forces; and (*c*) have been prevented by active service conditions from undertaking the examination during the period of their war service. This provision will remain in operation until December 31, 1948, that is to say, an examination of this type will probably be held in December, 1948.

Ex-service candidates who do not comply with the above requirements are referred to the last paragraph of regulation number 32 and are advised to communicate with the Censor-in-Chief. Regulation number 32 reads:

> All applicants for admission to the Final Examination shall be graduates of not less than five years of an approved medical school, university or college and, in addition, shall have (*a*) completed the Primary Examination or been exempt therefrom by the Council; (*b*) undergone one year's training as a resident medical officer in an approved hospital; (*c*) completed a course of apprenticeship training, approved by the Censor-in-Chief, in general surgery or in one of the surgical specialties set out in regulation 33.
>
> All applicants for Fellowship in general surgery shall have acted for a period to be determined by the Censor-in-Chief as an assistant to an approved surgeon or surgeons in the operating theatres and wards of an approved hospital, or have undergone a period of equivalent training to the satisfaction of the Censor-in-Chief.
>
> All applicants for Fellowship in approved specialties shall have, prior to the Fnal Examination, acted as an assistant to an approved general surgeon in the operating theatres and wards of an approved hospital for a period to be determined by the Censor-in-Chief, and shall have acted as an assistant to an approved surgeon in that specialty for a period to be determined by the Censor-in-Chief.
>
> Any of the conditions contained in this regulation may be waived by the Censor-in-Chief, at his discretion, in the case of candidates who have returned from service with the armed forces.

It will be appreciated, however, that such candidates must, on receiving permission from the Censor-in-Chief, present themselves for the type of examination adopted in December, 1945, which involves a written and oral examination.

Those graduates who wish to avail themselves of these provisions should obtain immediately an official form of application from the Secretary of the College, Spring Street, Melbourne, complete it in detail and forward it to the Censor-in-Chief so that their qualifications may be considered.

Congresses.

THE AUSTRALIAN AND NEW ZEALAND ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE twenty-seventh meeting of the Australian and New Zealand Association for the Advancement of Science will be held at Hobart during the week January 12 to 19, 1949. The President-elect is Dr. A. B. Walkom and the Honorary General Secretary is Professor N. A. Burges. The section which holds most interest for medical practitioners is Section I and N—Medical Science, National Health and Physiology. The President of the section will be Professor F. M. Burnet, of the Walter and Eliza Hall Institute of Medical Research, Melbourne; the Honorary Secretary will be Dr. G. A. Robbie, of the Royal Hobart Hospital. It is proposed to assemble papers for this section round the theme, "Resistance to and Control of Infection". Any practitioner desiring to take part in the work of this section is invited to communicate with Dr. Robbie. Full information about the meeting may be obtained from the Honorary General Secretary at Science House, 157-161, Gloucester Street, Sydney.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Numbers 69 and 87, of April 29 and June 3, 1948.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Transfer to Emergency List.—Surgeon Commander (Acting Surgeon Captain) David Shields Prentice is transferred to the Emergency List and reappointed for temporary service, dated 31st March, 1948.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Volunteer Reserve.

Appointment.—Norman Alfred Richards is appointed Surgeon Lieutenant, with seniority in rank of 4th June, 1943, dated 19th December, 1946.

AUSTRALIAN MILITARY FORCES.

Permanent Military Forces.

Australian Army Medical Corps (Permanent).

Colonel (Honorary Brigadier) F. K. Norris, C.B.E., D.S.O., E.D., is appointed from the Reserve of Officers (Australian Army Medical Corps) (3rd Military District), relinquishes the rank of Honorary Brigadier, is appointed Director-General of Medical Services, Adjutant-General's Branch, Army Headquarters, promoted to the temporary rank of Major-General and seconded for service with the Interim Army, 3rd May, 1948.

Interim Army.

Australian Army Medical Corps.

Colonel (Temporary Major-General) F. K. Norris, C.B.E., D.S.O., E.D., is appointed from the Australian Army Medical Corps (Permanent), 3rd May, 1948.—(Ex. Min. No. 68—Approved 1st June, 1948.)

ROYAL AUSTRALIAN AIR FORCE.

Reserve: Medical Branch.

Ex-Squadron Leader Derrick Scanlan (267221) is appointed to a commission with the temporary rank of Squadron Leader, 1st April, 1948.

The Royal Australasian College of Physicians.

A COURSE IN ADVANCED MEDICINE.

THE Victorian State Committee of the Royal Australasian College of Physicians is arranging a six-weeks course in advanced medicine from August 3, 1948, to September 12, 1948, at Prince Henry's Hospital, Melbourne. The course will occupy two full afternoons each week with ward round, lecture, and demonstration of pathological specimens, skiagrams *et cetera*. In addition there will be a ward round each Friday afternoon conducted by a senior physician. It is hoped that this weekly ward round will be a regular event.

The fee for the course will be £12 12s., but there will be no fee for the weekly ward round. The course will be limited to sixteen students.

Obituary.

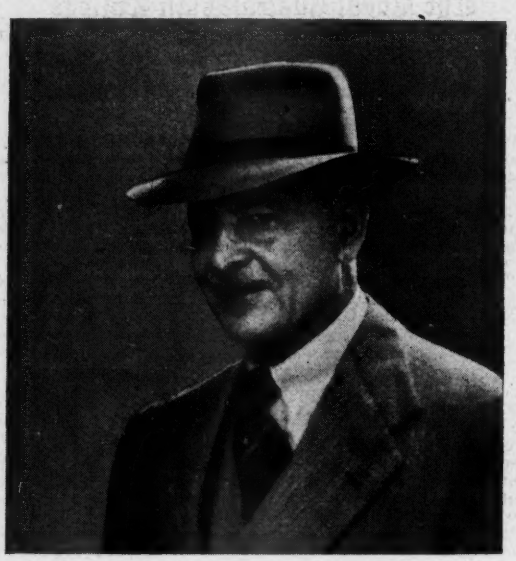
SYDNEY EVAN JONES.

WE are indebted to Professor W. S. Dawson for the following appreciation of the late Dr. Sydney Evan Jones.

Sydney Evan Jones was born in Adelaide, but after his family moved to Queensland, he went to Ipswich School and headed the State at the school leaving examination, winning the Lilley Medal. He proceeded to Saint Andrew's College in the University of Sydney and graduated M.B., Ch.B. in 1910. After a year as resident medical officer at the Royal Prince Alfred Hospital he was, together with a fellow medical graduate of the University of Sydney, A. L. McLean, appointed surgeon to Sir Douglas Mawson's expedition to the Antarctic (1911-1914) in which Dr. J. G. Hunter, then a science graduate, was biologist. On the way south there was a fatal epidemic amongst the dogs with cerebral symptoms which raised a scare of "mad-dog" amongst the ship's company. But post-mortem examinations by Jones revealed gastro-intestinal disease. Jones was a member of the Western Depot party in Queen Mary Land, and under Frank Wild's leadership gained experience in negotiating difficult ice country which stood him in good stead when he himself led a party some two hundred miles west of the expedition's base to the borders of Kaiser Wilhelm II Land at Gaussberg (November 7 to January 19, 1913). He recorded his experiences in Chapter XXII of Sir Douglas Mawson's "Home of the Blizzard". During the exploration westward Jones came across the first rookery of Antarctic petrels ever discovered. The work of the expedition was later recognized by the award of the Antarctic Medal to its members.

Jones then entered the Mental Hospitals Department of New South Wales, and was medical officer at Parramatta, Rydalmere and Callan Park Hospitals before being posted to Broughton Hall Psychiatric Clinic after that hospital ceased to take repatriation patients in 1923. In 1925 he was made medical superintendent and his life's work may be said to have begun from that date.

Broughton Hall, originally the residence of Australia's first Anglican bishop and set in ample grounds, was opened by the Inspector-General of Mental Hospitals of New South Wales, the late Dr. Eric Sinclair, in 1921, at a time when there were in Britain no half-way houses between the mental hospitals taking only certified patients and the general hospitals for wage-earners suffering from the more severe forms of psychoneurosis and from psychoses in their early stages. There were private mental hospitals and a few endowed institutes where those who could afford the fees could enter as voluntary boarders. The need for the wage-earner was obvious, but there were legal and financial obstacles to the spending of public money on "non-certified" patients. The late Henry Maudsley left a large sum of money to the London County Council for the establishment of the Maudsley Hospital, the first rate-aided institution in Britain for "voluntary" mental patients opened for civilian cases in 1922, after having been used, like Broughton Hall, for military psychiatric casualties. Broughton Hall was therefore a pioneer enterprise, and indeed its status was not legalized until the passing of the *Lunacy Amendment Act* in 1932. No better choice could have been made than the appointment of Sydney Evan Jones to develop this hospital. Patients who recovered under his expert and kindly devotion, and medical students and practitioners who admired his skill in the presentation of cases at demonstrations, did not always appreciate that he was responsible for the planning and planting of the grounds in their present beautiful form and for the design of the buildings which were added from



time to time. Jones could use a theodolite as expertly as he manipulated a microscope or a chemical balance. Incidentally he left in his private workshop an almost completed working scale model of a locomotive, one of many products of his skill as a craftsman.

From a hospital of 130 beds, with a medical staff of two, Broughton Hall expanded to its present size of 220 beds, with a discharge rate of 900 patients *per annum*, a turnover which makes considerable demands on the present staff of five medical officers. Jones was always anxious to improve the diagnostic and therapeutic facilities of his hospitals, and during the depression years he assisted a patient who had fallen on bad times to take a course at the Technical College and become a laboratory technician, and a small biochemical laboratory was in due course established and continued to to be used until the technician went on war service. Jones had also prepared a scheme for the establishment of a neurological and a children's section at Broughton Hall, and it is the intention of the Mental Hospitals Department to perpetuate Dr. Jones's memory by the establishment of a special pavilion bearing his name when funds become available. Meanwhile he arranged for the appointment of two visiting neurosurgeons.

Some years ago Jones was responsible for recasting the official tables of diagnosis and factors used in the compilation of the statistics published in the annual reports of his department, and for redesigning the case sheets. He also revised the dietary scales. His more important contributions to psychiatric literature, dealing with the delimitation and classification of certain clinical syndromes, belong to what may be regarded as the terminal phase of Kraepelinian influence on psychiatry. Doubtless with adequate laboratory facilities Jones would have engaged in,

or at least directed, research along more modern lines. He attempted insulin coma therapy some years ago, but there were difficulties in obtaining the facilities and in getting together a unit without which this treatment should not be undertaken. So he relied on cortical stimulation therapy as the active treatment of choice for the majority of his patients, resulting in a large turnover, though a larger medical staff would have made possible more detailed psychiatric investigation, a follow-up of cases, and research. Under Jones's direction, and with a more progressive policy on the part of those in authority, Broughton Hall might have become an institute of psychiatry equal to other more fortunately endowed organizations, and there is room for at least one such in Australia. It remains for Dr. Jones's successor not to despair of further development.

Jones was an active member and had been the chairman of the Section of Neurology and Psychiatry of the New South Wales Branch of the British Medical Association, and was a foundation member of the recently established Australasian Association of Psychiatrists. He had been invited to become a Foundation Fellow of the Royal Australasian College of Physicians. He was also an examiner in psychiatry in the University of Sydney. Jones's interests were centred in his hospital and his patients and he rejected the position of administrative head of his department. His nature was retiring, he shunned publicity, and only those who made some effort to understand him could appreciate his true worth, for he was one of those who hide their light under a bushel. But beneath a seemingly cold exterior there glowed a warmth of feeling and a stout spirit which sustained him through several periods of ill health over the years and through his last painful illness. He had a smile for a friend even as late as a day or two before his passing in his sixtieth year. Some words of R. L. Stevenson come to mind:

> I have trod the upward and the downward slope;
> I have endured and done in days before;
> I have longed for all, and bid farewell to hope;
> And I have lived and loved, and closed the door.

His first wife died soon after their marriage in the early days of his career in the public service, leaving him a daughter, and he had not long been remarried before fatal sickness came upon him. His daughter and widow deserve our deepest sympathy.

Professor John Bostock writes: I first knew Dr. Sydney Evan Jones in his early years at Broughton Hall. As Callan Park was adjacent we saw much of each other and I was able to deputize for him on his holidays. It was a good opportunity to see the commencement of his great experiment in occupational therapy, namely, the utilization of hospital grounds as machinery whereby a patient's mind could be diverted from neurosis to normality.

The overflow from the refrigerator became a fish-bearing stream spanned by willow pattern bridges. It meandered through a forest which was a sanctuary for birds. Each feature of the garden was utilized to give variety of colour and form. The labour involved was prodigious. Huge rocks, as in the manner of the Pharaohs, by ropes and manpower, were transported to better advantage points, so as to lose no single object which might add to the over-all picture. The scheme was worked out in meticulous detail on a drawing board as carefully as if it had been in an engineering workshop.

Of his early life Jones spoke little. Much of his boyhood was spent in south Queensland. His school career as a boy was sufficiently brilliant to give him the scholarship for medical training in Sydney.

In Mawson's expedition Jones wrote a section of the descriptive book. He had a great personal regard for Wilde—who was one of the leaders. On his polar adventures he was always reticent, but their recital was of intense interest to his friends.

His work was meticulously accurate whether on psychiatry or hobbies. He had a passion for truth, efficiency and accuracy. His hobbies were varied and included photography in which he preferred landscapes, radio on the technical side, and woodwork from the utilitarian to the decorative. Of later years he had indulged in work on metals and delighted to make tools for special purposes. His workshop was a joy to amateur and professional alike. He attributed much of his proficiency to his early life, since his father was an engineer. He maintained that machine work was a useful foil to work in psychiatry. As an example of his thoroughness he spent one leave taking a course in welding.

Jones worked not in spurts, but in torrents. When engaged on a subject he had an enormous capacity for work and an intense capacity for concentration.

For years he was extremely interested in hysteria and read widely on the subject. It was his c stom to make voluminous notes and to saturate himself with the material. Sleep was a further opportunity for study, since he voluntarily extended the half-waking state to provide opportunity for the hypnapagogic state. He was convinced that many of his most worthwhile notions appeared at these periods.

Jones was a humanist who appreciated that his sentiment for people was in itself a barrier to scientific progress. He obliged patients, acquaintances and friends who made enormous inroads on his time. This often seriously interfered with his opportunity for research.

As an administrator he was excellent. He believed in delegating authority and left people to do their jobs with the minimum of interference. This was possibly largely because each of the staff, whether in the garden or kitchen, the ward or consulting room, knew that the superintendent had complete mastery of the specialized duty and was personally interested in the way it was carried out.

The staff had a queer feeling of security, knowing that so long as Dr. Jones was present nothing could go wrong. As one of them remarked: "Even if a tradesman is flustered the doctor can always put him right."

His quality of leadership was never based on showmanship, but on the right use of a superb intellect and emotional honesty. Jones of the Antarctic carried his bravery into civil life. He was courageous and a square shooter. Withal he had a most orderly mind, he walked the beautiful scenic garden of Broughton Hall, in itself a monument to his genius as a gardener, and he fed his Singapore carp at the same hour each day. Even the fish had faith in his coming. His return from work was equally predictable.

Often such attributes bespeak dull mediocrity. In Jones they were merely a working mask for efficient living. They could be discarded to reveal a regal array of prodigious generosity, bubbling humour and glorious repartee.

Throughout his life Jones was a giver. His generosity was boundless. He gave in service or kind to all who sought his assistance. He felt it a duty to impart his knowledge to students, and this was shown in his numerous pre-graduation and post-graduation demonstrations during the years. It is to be regretted that he did not write more, so that posterity could have the benefit of his wisdom. This he himself regretted. The reason was partly lack of opportunity, but it was largely temperamental. His aim was perfection before publication. Under such circumstances output must be meagre. His keen patriotism and appreciation of military needs during the dark days of World War II led to his collaboration in a handbook for medical officers entitled "The Nervous Soldier".

A year before his death he had commenced to plan for a handbook of psychiatry for general practitioners. It is to be regretted that the consummation of this work was not possible.

He was lonely after his daughter's marriage and his friends rejoiced with him in his own third marriage, realizing that he would have affectionate companionship which he had always asserted was man's most precious possession. They must be content that for the brief space before his death his wife gave him the achievement of his wish.

He died as he lived, facing reality with good cheer and aiding others to bear burdens less than his own. Of him it may be truly said that whilst his loss is irreparable, he leaves a pleasant memory which for all time will be a joy and an inspiration.

BARUCH STEWART COWEN.

WE regret to announce the death of Dr. Baruch Stewart Cowen, which occurred on June 3, 1948, at Melbourne.

ARTHUR CHENERY.

WE regret to announce the death of Dr. Arthur Chenery, which occurred on June 6, 1948, at Kerang, Victoria.

CHARLES GEORGE RICE.

WE regret to announce the death of Dr. Charles George Rice, which occurred on June 8, 1948, at Canterbury, New South Wales.

HENRY SMITH.

We regret to announce the death of Dr. Henry Smith, which occurred on June 8, 1948, at Melbourne.

JOSEPH HENRY WILSON.

We regret to announce the death of Dr. Joseph Henry Wilson, which occurred on June 8, 1948, at Orange, New South Wales.

FRANCIS JOSIAH BONNIN.

We regret to announce the death of Dr. Francis Josiah Bonnin, which occurred on June 10, 1948, at Melbourne.

REUBEN COLLINS.

We regret to announce the death of Dr. Reuben Collins, which occurred on June 11, 1948, at Melbourne.

PIERO FRANCIS FIASCHI.

We regret to announce the death of Dr. Piero Francis Fiaschi, which occurred on June 15, 1948, at Sydney.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Graham, Donald James, M.B., B.S., 1944 (Univ. Sydney), 2, Concord Road, Strathfield.

Jones, Margaret Sinclair, M.B., B.S., 1946 (Univ. Sydney), Flat 9, 21, Waruda Street, Kirribilli.

Medical Appointments.

The following appointments have been made to the Council of the Institute of Medical and Veterinary Science, Adelaide: Sir Constantine Trent Champion de Crespigny (chairman) and Dr. Edmund Britten Jones (both nominated by the Council of the University of Adelaide); Dr. Lewis Wibmer Jeffries (deputy chairman), Acting Director-General of Medical Services.

Books Received.

"The 1947 Year Book of Endocrinology, Metabolism and Nutrition"; Endocrinology—edited by Willard O. Thompson, M.D.; Metabolism and Nutrition—edited by Tom D. Spies, M.D.; 1948. Chicago: The Year Book Publishers Incorporated. 7" x 4⅝", pp. 576, with many illustrations. Price: $3.75.

"Dietetics in General Practice", by Leslie Cole, M.A., M.D. (Camb.), F.R.C.P.; Second Edition; 1948. London: Staples Press, Limited. New York: Staples Press Incorporated. 6¼" x 4", pp. 160. Price: 8s. 6d.

"An Introduction to Medical Statistics", by Hilda M. Woods and William T. Russell; Second Edition; 1948. London: Staples Press, Limited. New York: Staples Press Incorporated. 7¼" x 4½", pp. 136. Price: 8s. 6d.

"The Practice of Local Anæsthesia", by George Bankoff, M.D., D.Ch., F.R.F.P.S., F.R.C.S.E.; Third Edition; 1948. London: Staples Press, Limited. New York: Staples Press Incorporated. 8½" x 5½", pp. 290, with many illustrations. Price: 30s.

"A Manual of Homœo-Therapeutics: An Introduction to the Study and Practice of Homœopathy", by Edwin A. Neatby, M.D. (London), and Thomas George Stonham, M.D. (London), with a foreword by C. E. Wheeler, B.Sc., B.S., M.D. (London); Third Edition; 1948. London, New York and Toronto: Staples Press, Limited. 7¼" x 4½", pp. 976. Price: 32s.

"Emergency Surgery", by Hamilton Bailey, F.R.C.S. (England), F.A.C.S., F.I.C.S., F.R.S.E.; Part 1, Sixth Edition; 1948. Bristol: John Wright and Sons, Limited. London: Simpkin Marshall (1941), Limited. 10" x 6", pp. 188, with many illustrations, some of them coloured. Price: 21s.

"The Surgery of the Colon and Rectum", by Sir Hugh Devine, M.S. (Melbourne), Hon. F.R.C.S. (England), F.R.A.C.S., F.A.C.S., and John Devine, M.S. (Melbourne), F.R.C.S. (England), F.R.A.C.S., F.A.C.S.; 1948. Bristol: John Wright and Sons, Limited. London: Simpkin Marshall (1941), Limited. 8½" x 5½", pp. 374, with many illustrations, some of them coloured. Price: 52s. 6d.

Diary for the Month.

JULY 1.—South Australian Branch, B.M.A.: Council Meeting.
JULY 2.—Federal Council of B.M.A. in Australia (Melbourne).
JULY 2.—Queensland Branch, B.M.A.: Branch Meeting.
JULY 6.—New South Wales Branch, B.M.A.: Council Quarterly Meeting.
JULY 7.—Victorian Branch, B.M.A.: Branch Meeting.
JULY 7.—Western Australian Branch, B.M.A.: Council Meeting.
JULY 9.—Queensland Branch, B.M.A.: Council Meeting.
JULY 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health). Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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THE

MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—35TH YEAR. SYDNEY, SATURDAY, JUNE 26, 1948. No. 26.

COMMONWEALTH OF AUSTRALIA. DEPARTMENT OF HEALTH.

OILY INJECTION OF PENICILLIN

2 mil. ampoule, 125,000 units per mil. 10/-
1 10 mil. bottle, 125,000 units per mil. 40/-
1 mil. ampoule, 300,000 units per mil. 12/1
2 mil. ampoule, 300,000 units per mil. 23/-
1 10 mil. bottle, 300,000 units per mil. 101/3

PENICILLIN OINTMENT, B.P., 500 units per gramme.
Tube containing 30 grammes 2/9

PENICILLIN OINTMENT FOR THE EYE, B.P., 1,000 units per gramme.
Tube containing 4 grammes 1/9

PENICILLIN CREAM, B.P.
Penicillin Cream, B.P., is available in packets holding:
1 ampoule containing 7,500 units of Penicillin; 1 ampoule containing Sterile Distilled Water; jar containing sufficient base to make ½ oz. of Penicillin Cream, B.P. .. 3/6

PENICILLIN LOZENGES, B.P., *500 units per lozenge.*
Bottles containing 25 lozenges, 2/8; 50 lozenges, 4/6; 100 lozenges, 8/-.

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Bottle containing 10 grammes 7/6

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STERILE SALINE } Specially prepared for use with Penicillin.
10 c.c. ampoule, 1/-; 5 × 10 c.c. ampoules, 3/9; 12 × 10 c.c. ampoules, 6/6.

Supplies of these products are available direct from the Commonwealth Serum Laboratories, and also from the undermentioned Senior Commonwealth Medical Officers:

NEW SOUTH WALES: Customs House, Circular Quay, Sydney.
VICTORIA: 113 Queen Street, Melbourne.
QUEENSLAND: Anzac Square, Adelaide St., Brisbane.
SOUTH AUSTRALIA: C.M.L. Building, 41-47 King William Street, Adelaide.
WESTERN AUSTRALIA: 4th Floor, G.P.O., Perth.
TASMANIA: Howick Street, Launceston.

COMMONWEALTH SERUM LABORATORIES
Parkville, N.2, Victoria, Australia

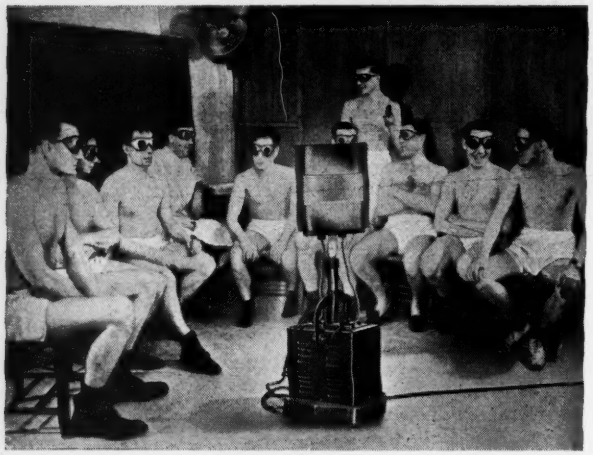

Illustration shows ratings of the Royal Navy (Submarine Branch) taking tonic sunbaths with the Hanovia 'Centrosol' unit on their depôt ship.

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Hospitals and clinics use ultra-violet irradiation very extensively: at one London Clinic 18,000 treatments are administered annually. Such numbers make it feasible to group cases for collective irradiation, and many types of equipment have served for this purpose at various times. To-day users find the Hanovia 'Centrosol' supremely valuable for collective sunray treatment, for either therapy or prophylaxis: 'Centrosol' sunbaths were routine for airmen and submarine sailors during the late war. In a room of moderate size, up to 60 patients hourly can be given normal irradiation with this equipment.

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ALPHA HOSPITALS BOARD. Applications are invited for he position of Medical Officer, Alpha Hospital. Salary £810 per nnum; £50 local council. Success- ul applicant required to visit ericho 38 miles away, weekly, uitable train service, £2 2s. ex- enses allowed. Comfortable resi- ence with nominal rental. Right f private practice allowed. Com- ence duties as soon as possible. Apply Secretary, P.O. Box 19, Alpha, stating age, marital state, ualifications, particulars of career, nd date able to commence duty.

WANTED TO PURCHASE, Zeiss Magnifying Spectacles. In eply please state price. Reply No. 102, c.o. this office.

WOMEN'S HOSPITAL (CROWN STREET): RESIDENT MEDI- AL OFFICERS.—Applications in- ited, closing 3rd July, 1948, for hree Junior Resident Medical Officers. Remuneration at the rate f £300 per annum plus board and esidence. To commence duties as oon as possible. Apply Secretary.

DEPARTMENT OF PUBLIC HEALTH, WESTERN AUSTRALIA: MEDICAL SERVICE. Applications are invited for positions of full-time Medical Officers to be stationed in the north-west at a salary of £1,197 per annum, subject to any subsequent basic wage adjustment. Applicants should preferably be not more than 35 years of age and willing to perform the usual duties of a practitioner, keeping records of services rendered; the collection of accounts will be made by the department. The medical officers will be required to act as flying doctor, carrying out routine and emergency visits by air. The cost of providing or hiring motor transport on official journeys will be borne by the department. If the medical officer elects to use his own car for official journeys, mileage will be paid for at the rate of 9d. per mile. For this purpose, if the appointee so desires, the department will advance funds to finance the purchase of a car. After a minimum service of three years they will be granted three months' recreation leave on full pay and six months' leave on full pay for a course of study approved by the Principal Medical Officer, in addition to travelling time to Perth. First-class fares paid from eastern States to station for self and family, together with furniture transfer, the latter not exceeding £50. Applications to be addressed to the Commissioner of Public Health, Perth, W.A.

MICROSCOPE FOR SALE. Condition as new. Reichert, Vienna. Complete with mechanical stage spare eyepiece oil immersion and two lower power lenses for £70 cash. WILLIAM PEARCE AND COMPANY, 154 Castlereagh Street, Sydney. M 2261-M 2262.

POSITION required as Secretary-Receptionist in doctor's rooms, Sydney or eastern suburbs. Apply No. 99, c.o. this office.

THE EASTERN SUBURBS HOSPITAL, YORK ROAD AND QUEENS PARK ROAD, BONDI JUNCTION, N.S.W.—Applications are invited for the position of Junior R.M.O. (male). Salary £260 p.a. plus cost of living adjustment, plus board and lodgings. Reply stating age and qualifications with copies only of references to F. G HALLETT, Secretary.

THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, PITT STREET, REDFERN.—Applications are invited for the position of Senior Resident Medical Officer (female), duties to commence as soon as possible. Salary £392 second year and £450 third year. Applications together with testimonials to be forwarded to the undersigned.—(Sgd.) MARY C. PUCKEY, Chief Executive Officer and Medical Superintendent.

COMMONWEALTH OF AUSTRALIA, DEPARTMENT OF HEALTH: MEDICAL OFFICERS, NORTHERN TERRITORY.—Applications are invited for appointment as Medical Officers, Northern Territory. Salary £1,094 to £1,244 per annum (annual increments of £50 per annum). A district allowance is payable varying from £45 to £130 per annum according to location and marital status. Appointments will be exempt from the provisions of the Commonwealth Public Service Act. Applications should be forwarded to the Director-General of Health, Canberra, from whom any further particulars may be obtained.

ROYAL HOBART HOSPITAL: JUNIOR RESIDENT MEDICAL OFFICER.—The undersigned invites applications from duly qualified and registered medical practitioners for immediate appointment to the above positions. Salary £383 per annum with board and residence. Preference given to those applicants who have completed a year at their teaching school. Conditions in accordance with Hospital Wages Board determination. Applicants are informed that medical personnel may during the course of their appointment be called upon to render service in Emergency Medical Service or in the Government Medical Service for not more than four (4) weeks of their term. Accommodation for single men only. Single fares at boat and train rates are refunded upon completion of six months' service. Applicants to state age, married or single, experience and qualifications and date able to commence duty. The conditions of this appointment are approved by the British Medical Association.—H. M. WRIGHT, Secretary, G.P.O. Box 495, Hobart.

VICTORIAN PARTNERSHIP PRACTICE.—A well-qualified surgical practitioner in a country-seaside district is offering a share of practice to a practitioner with medical qualifications. The district is an attractive one, and the share would return £2,500 per annum, with a professional residence immediately available. Finance could be arranged for an approved applicant. Details from ALLAN GRANT, Medical Agent, 54 Collins Street, Melbourne, C.1. Telegrams: Allgra. Telephone: Cent. 4171.

FOR SALE, unopposed practice in N.W. Queensland. Good district. Appointments (approx.) £900 (including Superintendent District Hospital). Gross takings £3,000. Rent furnished house and surgery £2 10s. weekly. Terms: £500 lease for 12 months, with option of purchase for £1,500. Apply No. 96, c.o. this office.

FOR SALE, Cossor Electrocardiograph for immediate visual and standard recordings. Perfect order and recently fitted with new tube. For particulars reply to No. 101, c.o. this office.

REEDY HOSPITAL.—An excellent opportunity awaits a Resident Medical Officer and Nursing Sisters at Reedy Hospital, situated in well-established gold mining town. Remuneration for a doctor is guaranteed not less than £1,000 p.a., plus right of private practice, with a well-equipped hospital. Excellent house provided. Comfortable quarters available for nursing sisters with excellent conditions and salaries supplemented by substantial increments from public effort. Applications and full particulars to the Secretary, Reedy, Western Australia.

MANLY DISTRICT HOSPITAL. Applications are invited from members of the medical profession practising in the Manly-Warringah district for two positions of Hon. Physician on the staff of the above hospital. Application should be made on the special form obtainable from the Secretary, and should indicate whether the applicant also wishes to be considered for any vacancy as Assistant Physician and Anæsthetist which may occur by reason of the appointment of assistant physicians to the present vacancies. Closing date Wednesday, 21st July, 1948.—FRANK MEDDOWS, Secretary to the Board of Management.

THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, PITT STREET, REDFERN.—Applications are invited for the following positions on the honorary medical staff: 1. Honorary Relieving Assistant Gynæcologist. Appointment until the expiration of the present term, that is, to the 31st December, 1949. 2. (a) Temporary Assistant Physicians (4), (b) Temporary Assistant Surgeons (2), (c) Temporary Assistant Gynæcologists (2), (d) Temporary Assistant Surgeon to the Ear, Nose and Throat Department (1), (e) Temporary Assistant Physician for the Diseases of the Skin (1). Term of appointment one year. Present holders are eligible for, but not entitled to, reappointment. Successful applicants will be eligible for, but not entitled to, reappointment for a further term. Applications in duplicate on the prescribed form to be in the hands of the undersigned not later than noon, Saturday, 10th July.—(Sgd.) MARY C. PUCKEY, Chief Executive Officer and Medical Superintendent.

GRADUATE (1938) doing post-graduate course wants morning work, Sydney or suburbs. Own car. Reply No. 100, c.o. this office.

THE MARRICKVILLE DISTRICT HOSPITAL: HON. CONSULTANT NEUROSURGEON. Applications giving full details are invited from medical practitioners with the necessary qualifications for appointment in the above capacity. Date of closing 19th July, 1948.—W. H. MCINTYRE, Secretary, Lilydale St., Marrickville.

EDUCATED ENGLISH WOMAN, 23, experienced private secretary, desires position as Secretary-Receptionist in Macquarie Street, Sydney, now. MRS. ANN ELDRIDGE ('phone FX 2447).

ASSISTANT wanted for Sydney suburban practice. Prefer live out, but can accommodate a single man. Possibility of purchase in two years. Salary £17 per week. All running expenses provided. Write full particulars to No. 103, c.o. this office.

CHILDREN'S HOSPITAL, CARLTON.—The Committee invites applications from legally qualified medical practitioners for the positions of Assistant Resident Medical Officers to the Hospital (5 vacancies) for the period 15th August, 1948, to 15th December, 1948. Salary £350 per annum plus board and residence. Applications must be submitted on form obtainable from the undersigned and close on Saturday, 24th July. By order.—H. BARRETT, Manager and Secretary.

CHILDREN'S HOSPITAL, CARLTON, MELBOURNE.—Appointment of Medical Superintendent. The Committee of Management invites applications from legally qualified medical practitioners for the position of Medical Superintendent to the Hospital. Appointment in the first place will be for a period of five years. Salary £1,500 to £2,000 per annum, according to qualifications. For a commencement the position will be non-resident, but the hospital is to be completely rebuilt on a new site and included in the plans is a residence for the Medical Superintendent. Duties of the position are obtainable from the undersigned, with whom applications close on Saturday, July 31st, 1948.—By Order, H. BARRETT, Manager and Secretary.

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